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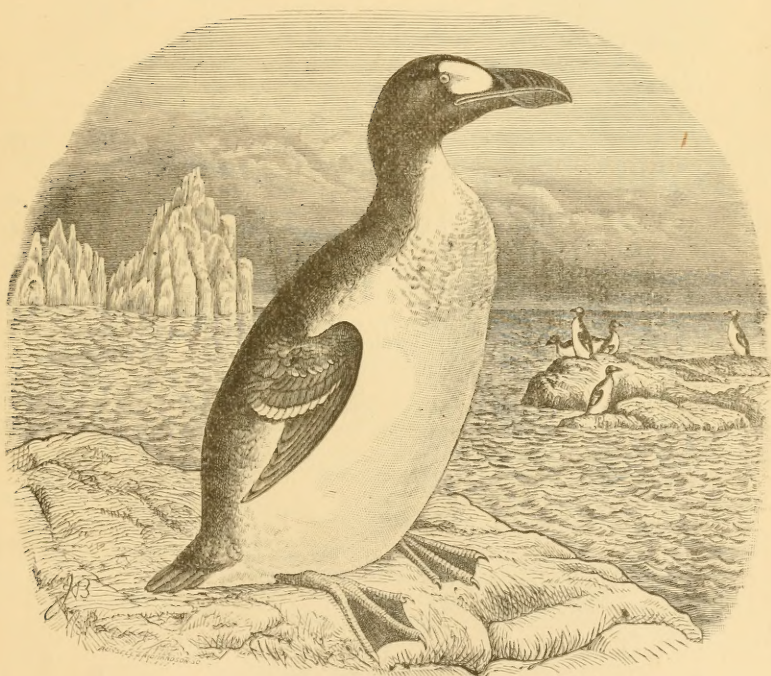
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GURNEY, JOHN HENRY, Keswick Hall, Norwich, England.....	1883
* HAAST, Dr. JULIUS VON, Christchurch, New Zealand.....	1884
HARGITT, EDWARD, Broadwater Lodge, Broadwater, Worthing, Sussex, England.....	1884
HARTING, JAMES EDMUND, Linnæan Society, Burlington House, Pic- cadilly, London.....	1883
HARVIE-BROWN, JOHN A., Dunipace House, Larbert, Stirlingshire, Scotland.....	1883
HAYEK, Dr. GUSTAV VON, Vienna.....	1884
HENSON, HARRY V., Yokohama.....	1888
HOLUB, Dr. EMIL, Vienna.....	1884
* HOMMEYER, Dr. E. F. VON, Stolp, Germany.....	1884
KNUDSON, VALDEMAR, Kauai, Hawaiian Ids.....	1888
KRUKENBERG, Dr. E. F. W., Würzburg, Germany.....	1884
KRÜPER, Dr. THEOBALD J., University Museum, Athens, Greece....	1884
LAYARD, E. L., H. B. M. Consul, Noumea, New Caledonia.....	1884
LYTTLETON, THOMAS, Lord LILFORD, Lilford Hall, Oundle, Eng- land.....	1889
McFARLANE, ROBERT, Winnipeg, Manitoba.....	1886
MADARÁSZ, Dr. JULIUS VON, National Museum, Budapest, Hungary.	1884
MALMGREN, Dr. A. J., University, Helsingfors, Finland	1884
* MARSCHALL, Graf. A. F., Vienna.....	1884
MENZBIER, Dr. M., Moscow.	1884
MEYER, Dr. A. B., Königl. Zool. Museum, Dresden.....	1884
MIDDENDORF, Dr. A. VON, Dorpat, Russia.....	1884
MOJSISOVICS, Dr. A. VON, Gratz, Austria.....	1884
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NICHOLSON, FRANK, 62 Fountain St., Manchester, England.....	1884
OATES, E. W., 6 Tenterden St., Hanover Sq., London.....	1884
OUSTALET, Dr. EMILE, Jardin des Plantes, 55 Rue de Buffon, Paris.	1883

PALMÉN, Prof. J. A., Helsingfors, Finland.....	1883
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RAMSEY, E. P., Sydney, New South Wales.....	1884
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RINGER, FREDERIC, Nagasaki, Japan.....	1888
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TSCHUSI ZU SCHMIDHOFFEN, Count VICTOR RITTER VON, near Hal- lein, Salzburg, Austro-Hungary.....	1884
WATERHOUSE, F. H., 3 Hanover Square, London, W.....	1889
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ALLEN, FRANCIS H., West Roxbury, Mass.....	1888
AMERY, CHARLES F., 'Forest and Stream' Pub. Co., 318 Broadway, New York City.....	1886
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CONKLIN, Dr. WM. A., Director of Menagerie, Central Park, New York City.....	1885
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CURTIS, FRED W., Wauwatosa, Wis.....	1889
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EMERSON, W. OTTO, Haywards, Cal.....	1885
EVANS, EVAN M., Englewood, N. J.....	1888

EVANS, SAMUEL C., Jr., Riverside, Cala.	1889
EVERMANN, Ptof. B. W., Terre Haute, Ind.	1883
FAIRBANKS, Hon. FRANKLIN, St. Johnsbury, Vt.	1885
FANNIN, JOHN, Provincial Museum, Victoria, B. C.	1888
FERNALD, ROBERT H., Orono, Me.	1890
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FISHER, WM. HUBBELL, 12 Wiggins Block, Cincinnati, Ohio.	1883
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FLINT, WM. R., Madera, Fresno Co., Cala.	1890
FORBUSH, EDW. H., 424 Main St., Worcester, Mass.	1887
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FREEMAN, WM. H., 216 Reid Ave., Brooklyn, N. Y.	1889
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HARDY, MANLY, Brewer, Maine.	1883
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HAUPT, LOUIS, 61 Liberty St., New York City.	1888
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HEIMSTREET, Dr. T. B., 14 Division St., Troy, N. Y.	1888
HELME, ARTHUR H., Miller's Place, Suffolk Co., N. Y.	1888
HENDRICKSON, W. F., 860 Broadway, New York City	1885
HICKS, HENRY, Westbury Station, Queens Co., N. Y.	1888
HICKS, JOHN D., Old Westbury, Queens Co., N. Y.	1888
HIGGINS, ALGERNON S., 1227 Fulton St., Brooklyn, N. Y.	1888
HINE, Mrs. JANE L., Sedan, Ind.	1890
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HOLMAN, RALPH H., Worcester, Mass.	1890
HOLMES, E. S., 103 Ottawa St., Grand Rapids, Mich.	1885
HOLTERHOFF, G., Jr., Los Angeles, Cala.	1883
HOLZINGER, JOHN M., U. S. Dept. of Agriculture, Washington, D. C.	1887
HOOPES, JOSIAH, West Chester, Pa.	1889

HORNADAY, W. T., Buffalo, N. Y.....	1888
HOUGH, ROMEYN B., Lowville, N. Y.....	1883
HOWELL, ARTHUR H., 212 Madison St., Brooklyn, N. Y.....	1889
* HOWLAND, SNOWDON, Newport, R. I.....	1883
HOY, DR. P. R., Racine, Wis.....	1883
HOYLE, CHARLES E., Millbury, Mass.....	1889
HOYT, WM. H., Stamford, Conn.....	1888
HULL, WALTER B., Milwaukee, Wis.....	1889
HURD, THEO. D., Riverside, Cala.....	1890
HURTER, JULIUS, 2346 South 10th St., St. Louis, Mo.....	1888
HVOSLEF, DR. J. C., Lanesboro, Minn.....	1885
INGALLS, CHARLES E., East Templeton, Mass.....	1885
INGERSOLL, ALBERT M., Box 712, San Diego, Cala.....	1885
INGRAHAM, D. P., Elmira, N. Y.....	1889
JACKSON, THOS. H., West Chester, Pa.....	1888
JACOBS, J. WARREN, Waynesburg, Pa.....	1889
JAMES, HOWARD K., Rockville, Conn.....	1888
JARDINE, CHAS. S., 318 East 39th St., New York City.....	1888
JEFFRIES, WM. A., 78 Devonshire St., Boston, Mass.....	1883
JENKS, PROF. J. W. P., 31 George St., Providence, R. I.....	1888
JENNINGS, ALLEN H., 2101 Oak Ave., Baltimore, Md.....	1886
JESURUN, MORTIMER, Douglas, Wyoming.....	1890
JOHNSON, ALBERT I., Hydeville, Vt.....	1885
JOHNSON, FRANK E., Parkville, Kings Co., N. Y.....	1888
JOHNSON, FRED. O., Oakland Cala.....	1888
JOHNSON, PROF. O. B., Seattle, Washington.....	1885
JONES, LYND, Grinnell, Iowa.....	1888
JONES, MARCUS E., Salt Lake City, Utah.....	1890
JORDAN, A. H. B., Willsborough, Essex Co., N. Y.....	1888
JORDAN, PROF. D. S., Bloomington, Ind.....	1885
JOUY, P. L., Smiths. Inst., Washington, D. C.....	1883
KEELER, CHARLES A., Berkeley, Alameda, Co., Cala.....	1889
KELLOGG, VERNON L., Lawrence, Kan.....	1888
KENDALL, W. C., U. S. Fish Commission, Washington, D. C.....	1886
KING, GEORGE GORDON, Newport, R. I.....	1888
KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C.....	1883
KOHN, GUSTAVE, 14 Carondelet St., New Orleans, La.....	1886
KUMLIEN, LUDWIG, Sumner, Wis.....	1888
*KUMLIEN, THURE, Milwaukee, Wis.....	1883
LADD, SAM'L B., West Chester, Pa.....	1889
LAMB, CHARLES R., Cambridge, Mass.....	1885
LANO, ALBERT, Madison, Minn.....	1890
LANTZ, PROF. D. E., Manhattan, Kansas.....	1885
LAWRENCE, FRANK M., Moriches P. O., Suffolk Co., N. Y.....	1888
LAWRENCE, ROBT. B., Mills Building, New York City.....	1883

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LAWRENCE, ROBERT HOE, Humptulips, Washington.....	1890
LAWRENCE, Hon. WM. M., 51 Liberty St., New York City.....	1888
LEWIS, E. G., Hartford, Conn.....	1888
LEWIS, WM. H., Pawtucket, R. I.....	1890
LEWIS, JOHN B., Eubanks, Pulaski Co., Ky.....	1890
*LINDEN, Prof. CHARLES, Buffalo, N. Y.....	1885
LLOYD, WILLIAM, Marfa, Texas.....	1885
LOCKWOOD, Dr. SAM'L, Freehold, N. J.....	1890
LONG, H. B., Lake View, Mass.....	1889
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LOOMIS, LEVERETT M., Chester, S. C.....	1883
LORING, J. ALDEN, Owego, N. Y.....	1889
LUCAS, FREDERIC A., U. S. Nat. Mus., Washington, D. C.....	1888
LUCAS, WM. H., Bridgeport, Conn.....	1889
*MABBETT, GIDEON, Rodney, Jefferson Co., Miss.....	1888
MACGILLIVRAY, ALEX. D., Cornell Univ., Ithaca, N. Y.....	1890
MACKAY, Prof. A. H., Halifax Academy, Nova Scotia.....	1885
MACKAY, GEO. H., Nantucket, Mass.....	1890
MACOUN, Prof. J., Geol. and Nat. Hist. Surv., Ottawa, Can.....	1883
McGREGOR, R. C., 2841 Champa St., Denver, Col.....	1889
McLENNAN, CHAS. A., Truro, Nova Scotia.....	1889
MAITLAND, ROBERT L., 70 Broad St., New York City.....	1889
MALI, CHARLES M., 329 Broadway, New York City.....	1889
MARSHALL, ALFRED, 115 Liberty St., New York City.....	1886
MASON, EDWARD C., Arlington, Mass.....	1888
MATHER, SIDNEY G., Morristown, N. J.....	1890
MERRIAM, Miss FLORENCE A., Locust Grove, Lewis Co., N. Y.	1885
MERRILL, HARRY, Bangor, Maine.....	1883
METCALFE, WM. C., 21 Cortlandt St., New York City.....	1886
MILLER, G. S., Jr., Peterboro, N. Y.....	1886
MILLER, Mrs. OLIVE THORNE, 244 Macon St., Brooklyn, N. Y.....	1887
*MINOT, H. D., St. Paul, Minn.....	1883
MOORE, J. PERCY, 1931 Judson Place, Philadelphia, Pa.....	1886
MORCOM, G. FREAM, 870 North Park Ave., Chicago, Ill.....	1886
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PANNEPACKER, D. E., 2513 North 12th St., Philadelphia, Pa.....	1888
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RIECKER, ERNST, 900 South 4th St., St. Louis, Mo.....	1888
RIKER, C. B., South Orange, N. J.....	1885
RILEY, Prof. C. V., U. S. Entomologist, Washington, D. C.....	1885

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RIVES, Dr. WM. C., Newport, R. I.....	1885
ROBBINS, WM. A., 528 Golden Gate Ave., San Francisco, Cala.....	1888
ROBERTS, W. F., 503 E St., N. W., Washington, D. C.....	1888
ROOSEVELT, THEODORE, Oyster Bay, Queens Co., N. Y.....	1888
ROWLAND, THOS., 182 6th Ave., New York City.....	1890
ROWLEY, J., Jr., Am. Mus. Nat. Hist., New York City.....	1889
RUSSELL, GEO. C., 144 West 7th St., Erie, Pa.....	1888
SAGE, HENRY M., Yale Univ., New Haven, Conn.....	1885
SAUNDERS, DE ALTON, Alfred Centre, N. Y.....	1889
SCHICK, CHAS. S., Sea Isle City, N. J.....	1889
SCHLEGEL, Miss MATILDE, 134 16th St., Buffalo, N. Y.....	1889
SCHURR, THEO. A., 66 Grand St., Waterbury, Conn.....	1888
SCOTT, W. L., 86 Sparks St., Ottawa, Can.....	1883
SEE, ABRAM W., Arlington, N. J.....	1888
SEELY, HENRY H., Middlebury, Vt.....	1890
SEITER, PHIL. J., Chattanooga, Tenn.....	1888
SHARP, Miss ALDA M., Gladbrook, Iowa.....	1889
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SHORES, Dr. E. I., Soldiers' Home, Hampton, Va.....	1883
SISSENÈRE, OSCAR, Foreign Dept. Mutual Life Ins. Co., New York City.....	1889
SLADE, JOHN A., 1134 Herkimer St., Brooklyn, N. Y.....	1888
*SMALL, EDGAR A., Hagerstown, Md.....	1883
SMITH, CLARENCE A., care F. M. Chapman, 77th St. & 8th Ave., New York City.....	1889
SMITH, HORACE G., Jr., 2918 Lafayette St., Denver, Col.....	1888
SMITH, Dr. HUGH M., 1248 New Jersey St., Washington, D. C.....	1886
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SMITH, S. SIDNEY, 59 Wall St., New York City.....	1888
SMYTH, CLIFFORD, 435 East 116th St., New York City.....	1890
SORNBORGER, JEWELL D., Andover, Mass.....	1888
SOUTHWICK, E. B., Arsenal Bldg., Central Park, New York City....	1888
SPELMAN, H. M., 62 Sparks St., Cambridge, Mass.....	1883
STANTON, Prof. J. Y., Bates College, Lewiston, Me.....	1883
STEBBINS, EDWARD S., Minneapolis, Minn.....	1889
STEPHENS, F., Santa Ysabel, San Diego Co., Cala.....	1883
STONE, WITMER, Acad. Nat. Sci., Philadelphia, Pa.....	1885
STREATOR, C. P., Garrettsville, O.....	1889
STRODE, Dr. W. S., Bernadotte, Ill.....	1889
STRONG, REUBEN M., Wauwatosa, Wis.....	1889
STUDER, JACOB H., P. O. Box 2417, New York City.....	1888
SURBER, THAD., White Sulphur Springs, West Va.....	1890
SWALLOW, C. W., Willsburgh, Multuoma Co., Oregon.....	1890
SWINBURNE, JOHN, Holbrook, Apache Co., Ariz.....	1887

*Deceased.

TALBOT, D. H., Sioux City, Iowa.....	1885
TATLOCK, JOHN, JR., Mutual Life Ins. Co., New York City.....	1887
TAYLOR, ALEX. O'D., 124 Bellevue Ave., Newport, R. I.....	1888
TAYLOR, HARRY R., Alameda, Cala.....	1889
TENNANT, EDW., Attleboro Falls, Mass.....	1889
THOMPSON, ERNEST E., 86 Howard St., Toronto, Can.....	1883
THOMPSON, FRANK J., Zoölogical Garden, Philadelphia, Pa.....	1885
THORNE, Capt. PLATTE M., 22d Inf. U. S. A., Ft. Keogh, Montana.....	1885
THURBER, E. CARLETON, Albambra, Cala.....	1886
TODD, LOUIS M., Calais, Me.....	1887
TODD, W. E. CLYDE, Beaver, Pa.....	1890
TOPPAN, GEO. L., Jackson St., Chicago, Ill.....	1886
TORREY, BRADFORD, Melrose Highlands, Mass.....	1883
TORTAT, W. R. M., Atchison, Kansas.....	1890
TOWNSEND, C. H., Smiths. Inst., Washington, D. C.....	1883
TREAT, WILLARD E., East Hartford, Conn.....	1885
TROMBLEY, JEROME, Petersburg, Mich.....	1885
TROTTER, DR. SPENCER, Prof. Nat. Hist., Swarthmore College, Swarthmore, Pa.....	1888
TURNER, DR. M. H., Hammondville, Essex Co., N. Y.....	1885
TURNER, DR. T. S., Huntington, N. Y.....	1889
TUTTLE, DR. CARL, Berlin Heights, O.....	1890
VAN CORTLANDT, Miss ANNE P., Croton Landing, Westchester Co., N. Y.....	1885
VELIE, DR. J. W., Academy of Sciences, Chicago, Ill.....	1886
*VENNOR, H. G., Montreal, Can.....	1883
VERRILL, ALPHEUS H., 86 Whaley Ave., New Haven, Conn.....	1888
VILARO, DR. JUAN, Prof. Nat. Hist., Havana Univ., Havana, Cuba.....	1888
VOORHEES, CLARK G., 59 East 75th St., New York City.....	1888
WADSWORTH, D. S., Box 1061, Hartford, Conn.....	1885
WAKEFIELD, J. R., Dedham, Mass.....	1885
WALKER, DR. R. L., Mansfield Valley, Pa.....	1888
WARREN, DR. B. H., West Chester, Pa.....	1885
WEBSTER, FREDERIC S., 1345 Penna. Ave., Washington, D. C.....	1886
WEEKS, W. J., Yaphank, Suffolk Co., N. Y.....	1889
WELLS, DR. JOHN A., Englewood, N. J.....	1888
WEST, LEWIS H., Roslyn, Queens Co., N. Y.....	1887
WEST, SAM'L H., 76 Devoe St., Brooklyn, N. Y.....	1889
WHEELER, DAVID E., St. Paul's School, Concord, N. H.....	1888
WHITE, HARRY GORDON, U. S. Fish Com., Woods Holl, Mass.....	1889
WHITE, STEWART E., Grand Rapids, Mich.....	1890
WICKHAM, H. H., Beaver, Pa.....	1890
WICKS, M. L., JR., Los Angeles, Cala.....	1890
*WILLARD, S. W., West DePere, Wis.....	1883
WILLIAMS, J. B., 23 St. Vincent St., Toronto, Can.....	1889

*Deceased.

WILLIAMS, ROBERT S., Great Falls, Montana.....	1888
WINTLE, ERNEST D., 11 Hospital St., Montreal, Can.....	1887
WINTON, REV. GEORGE BEVERLY, San Luis Potosi, Mexico.....	1889
WOOD, A. II., Painted Post, N. Y.....	1887
*WOOD, DR. WILLIAM, East Windsor Hill, Conn.....	1883
WOODMAN, EDMUND J., Phillips Acad., Andover, Mass.....	1890
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WRIGHT, Capt. J. W. A., Livingston, Ala.....	1888
Zerega, Dr. LOUIS A., Bellevue Hospital, New York City.....	1883

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*Deceased.



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KETTERLINUS, PHILADA

ICTERUS NORTHROPÆ ALLEN

ADULT MALE

♂ YOUNG MALE

3/5 NAT. SIZE

THE AUK:

A QUARTERLY JOURNAL OF ORNITHOLOGY.

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JANUARY, 1891.

No. I.

A STUDY OF FLORIDA GALLINULES, WITH SOME NOTES ON A NEST FOUND AT CAMBRIDGE, MASSACHUSETTS.

BY WILLIAM BREWSTER.

EARLY in June, 1889, while wading about in the Fresh Pond swamps on the outskirts of Cambridge, I heard one afternoon an unfamiliar bird cry. It was a succession of hen-like *cucks* given slowly, but in connected series, and sometimes ending with a prolonged, drawling *keé-ar-r*, *kreeé-ar-r*, suggestive of discontent, if not positive suffering, on the part of the bird. The voice was so loud and strong that it might have been heard nearly or quite half a mile away. Several times afterward during the next few days this strange cry was heard, always in the same place—a bed of cat-tail flags growing near the middle of a wide, flooded meadow. In company with Mr. Faxon and Mr. Torrey I made repeated efforts to find the bird but we failed to obtain any clue to its identity.

It was not until the evening of May 18, 1890, that we again heard this mysterious cry, this time in a swamp about an eighth of a mile from the marsh just mentioned. It was repeated at frequent intervals, and at length was answered by a second bird which Mr. Frank M. Chapman, who was with us at the time, at once declared to be a Florida Gallinule. The fact that this second cry was uttered immediately after the first, apparently in reply to it, and that, while differing in form, it resembled

the first in tone, led us to conjecture that both birds were Gallinules, the variation in their notes being due to a difference of sex. This surmise proved correct, for both were seen before many days passed, and were watched in the act of uttering the cries just mentioned as well as making other sounds that will be described later.

Their chosen haunt was a swamp about five acres in extent, covered with dense beds of cat-tail flags and thickets of low willows, among which were many pools and ditches of open water three or four feet in depth connected by a network of muskrat run-ways. The only really dry places were the tops of the numerous large tussocks and scattered houses of the muskrats, for among the willows and cat-tails the water was everywhere from six to twelve inches deep. The swamp was bordered on one side by a railroad, on the next by a high knoll, on the third by partially submerged woods of dead or dying maples, while on the fourth side an expanse of marshy ground stretched away for hundreds of yards to the shores of a pond. The area covered most thickly with flags and willows was separated from the maple swamp by a ditch, broad, straight and practically free from all vegetation save duck-weed, which formed an emerald carpet on the surface of the brown, stagnant water.

The Gallinules, for reasons best known to themselves, paid frequent visits to the flooded woods, always crossing and recrossing the ditch at a certain spot where an island, or rather raft, of floating vegetation entangled among the stems of a half-dead bush, afforded some slight cover as well as a convenient place for feeding and basking in the sun. The knoll just mentioned commanded an unobstructed view of this ditch, and we soon found that by lying still on the grass or crouching behind a cluster of alders we could watch the birds from a distance of less than forty yards without danger of alarming them.

Sometimes one appeared, sometimes the other, but the male the more frequently. He was a truly beautiful creature. With the exception of the yellow tip, his bill was scarlet, and this color extended back over a broad frontal shield which at a little distance looked like the red comb of a laying hen. At every movement of the head this brilliant color flashed like a flame. When he swam in under the bushes it glowed in the dense shade like a living coal, appearing and disappearing as he turned

toward or from us, and often catching the eye when all other trace of him was lost. In the sunlight his breast appeared to be of a rich bluish plum color, at other times slaty. The legs were greenish yellow, the head black, the neck nearly so, the wings and back cinnamon or reddish brown.

He rarely crossed the ditch without stopping at the island to bathe. Standing at the water's edge, with a quick plunge and upward fling of the head he scattered the drops over his back in a shining shower, opening and trembling his wings as the water fell. After repeating this performance five or six times in rapid succession, he rested a moment, and then went through it once more. After his plumage became thoroughly soaked, he proceeded to dress it, running each feather separately through his bill. This elaborate toilet occupied a considerable time, often lasting as long as fifteen minutes. When it was completed to his satisfaction, he would start off to feed again.

His manner of swimming and of feeding from the surface of the water was very like that of a Coot. He sat high and accompanied the strokes of the feet with a forward-and-backward nodding motion of the head and neck, accentuated at times as he reached out to seize some tempting morsel. On land he walked like a Rail, threading his way deftly among the stems of the bushes and tall rushes, stepping daintily, lifting and putting down his feet slowly, and almost incessantly jerking up his tail with a quick, nervous motion which caused the under coverts to flash like the sudden flirt of a handkerchief. As he picked his food from the vegetation at his feet, the head and neck were shot forward and downward at intervals of about a second, with a peculiarly vivid, eager motion. His manner of walking and feeding also suggested that of the Guinea-hen, the body being carried low and in a crouching attitude, while the movements of the head partook of that furtive swiftness which is so characteristic of this barnyard fowl.

Our Gallinule at most times, whether in action or repose, was a bird of slender shape and graceful outline, his carriage light yet firm, the play of the body lithe and strong. While preening his feathers, however, his attitude was often stiff and awkward, and the ruffling of his plumage made him appear nearly as portly as a duck. Again, the motion of flight was ludicrously awkward and uncouth. When, frightened by a glimpse of us through the

flags, he rose and flew with legs hanging down, wing-beats feeble and labored, the whole bearing was indicative of strain and exhaustion, which received an added emphasis from the abrupt reckless drop into the bushes which ended the flight.

Late one afternoon we suddenly heard a great outcry, and soon our pair of Gallinules appeared; the female, who was much the plainer-colored in every respect, swimming swiftly, her tail lowered and about in line with the back; the male flapping his wings on the water in his eagerness to overtake her. This he soon succeeded in doing, but just as he clutched at her with open bill, evidently with amorous designs, she eluded him by a sudden clever turn. He then swam round her in a narrow circle, carrying his tail wide-spread and erect, his neck arched, his scarlet front fairly blazing and apparently much enlarged and inflated. Seeing that she would not permit his approaches, he soon gave over the pursuit and returned to his favorite raft, while the female swam into the bushes. During the chase one of the birds, presumably the male, uttered repeatedly the following cry: *ticket—ticket—ticket—ticket* (six to eight repetitions each time). This was doubtless a wooing note, for we heard it on no other occasion.

The calls of these Gallinules were so varied and complex that it seems hopeless to attempt a full description of them. I certainly know of no other bird which utters so many different sounds. Sometimes they gave four or five loud harsh screams, very like those of a hen in the clutches of a Hawk, only slower and at longer intervals; sometimes a series of sounds closely resembling those made by a brooding hen when disturbed, but louder and sharper. Then would succeed a number of querulous, complaining cries, intermingled with subdued clucking. Again I heard something which sounded like this: *kr-r-r-r-r*, *kruc-kruc*, *krar-r*; *kh-kh-kh-kh-kea-kea*, delivered rapidly and falling in pitch toward the end. Shorter notes were a single, abrupt, explosive *kup*, very like the cry given by a startled frog just as he jumps into the water, and a low *klóc-klóc* or *klóc-klóc-klóc*. Speaking generally, the notes were all loud, harsh, and discordant, and nearly all curiously hen-like.

At intervals of perhaps half an hour during the greater part of the day the two birds called to one another from various parts of the swamp, evidently for the purpose of ascertaining each other's

whereabouts. They were occasionally answered by a pair in a neighboring swamp and these in turn by a third pair further off. In the early morning and late afternoon their calls were frequent and at times nearly incessant. They ceased almost entirely after nightfall, for the Florida Gallinule is apparently much less nocturnal than any of the Rails, if not so strictly diurnal as most of our birds.

Thus far our experience had proved interesting to be sure, but hardly unique, since the Florida Gallinule has several times been observed within the borders of the State. On the morning of June 5, however, Mr. Faxon and I came suddenly on the nest of the bird, never before found in Massachusetts. It was in the midst of a low, half-submerged thicket of *Spiraea salicifolia*, intermingled with a few wild-rose bushes and alders, four or five feet in height. The foliage was scanty, and the tops of the bushes withered. Among their stems the water was from twelve to fifteen inches deep, quite free from grass, flags, tussocks, or any floating vegetation save a thin coating of duck-weed over the surface.

The uniform light color of the nest—a pale, bleached straw, nearly that of dead grass—thrown into relief against the background of dark water, rendered it so conspicuous an object that it caught my eye at a distance of fully twenty-five feet. Obviously the birds had disregarded, either deliberately or unconsciously, all considerations of protective coloring, and then, with apparently studied boldness, had rejected the safe shelter of tangled wild-rose thickets, dense beds of cat-tail flags and clusters of bushy-topped tussocks with which the marsh abounded, to build their home among scattered bushes in the centre of a nearly open pond!

With the exception of a little dry tussock-grass which formed a lining, the nest was composed wholly of cat-tail flags of last year's growth, all of which must have been brought by the Gallinules a distance of at least twenty-five yards, much of the way through bushes where the water was too deep for the birds to get any firm footing. As some of the stalks were nearly two feet in length, an inch thick at the base, and very heavy, the labor involved must have been great.

About the rim and outer edges of the nest the flags were broken or doubled in lengths of three to six inches, the ends of

which, projecting upward and outward, formed a fringe of blunt but bristling points that prevented the eggs from rolling, or being crowded, out. On one side this fringe was wanting for a space of two or three inches where a pathway about six inches in length led from the edge of the nest down a gentle incline to the water. This pathway was composed of broad flags from twenty to twenty-three inches long drawn out straight, with the slender tips firmly woven into the nest and the heavy water-soaked butts resting some distance away on the bottom. It was evident that these flags had been carefully selected and adjusted to form a sort of 'gang-plank' by means of which the bird might enter and leave the nest without disarranging or breaking the brittle material which formed its rim. The whole structure was saved from danger of submersion in case of a sudden rise of water by the buoyancy of its materials, but it derived its chief support from the stems of the bushes, among which it was firmly wedged. It certainly did not rest on the bottom, for I ran my hand under it and found everywhere a clear space of several inches in depth.

The measurements of the nest *in situ* were as follows: greatest external diameter, 20 inches; least external diameter, 13 inches; height of rim above the water, 4 inches; total height about 8 inches. The egg cavity was symmetrical but shallow ($2\frac{3}{8}$ inches in depth), and measured 7 inches across.

The twelve eggs composing the set filled the nest to the rim, but were arranged in a single tier—the ends pointing in every direction. They were perfectly clean, and there was no excrement in or about the nest. Three were fresh; a fourth contained a small embryo, dead and partially decomposed; the remaining eight were within a few days of hatching. When we found the nest the eggs were warm, but neither of the birds was seen although both came close about us at times under cover of the flags and bushes, uttering the frog-like *kuſ* and occasionally one or another of their louder cries; on the whole they made very little noise while we were in the swamp, much less, in fact, than on many occasions when there was nothing to disturb them. It should be mentioned, however, that for a week or more before the nest was found they had been getting more and more silent daily, and showed themselves less and less often. After the nest was taken—it was far too great a prize to be spared—there was another period of clamor and activity during which they appeared

to be building a second nest in a spot about fifty yards from the site of the first. Not caring to disturb them further we made no search for this second nest. Of its fate we know nothing definite, but there are good reasons for believing that the eggs were hatched and the young successfully reared.

A LIST OF BIRDS FROM NORTHEAST BORNEO, WITH FIELD NOTES BY MR. C. F. ADAMS.

BY D. G. ELLIOT.

(Concluded from Vol. VII, p. 359.)

FAMILY PICIDÆ.

50. *Xylolopes validus*.

Picus validus TEMM. Plan. Col. pls. 378, 402.

Megapicus validus MALH. Mon. Pic. I, p. 28, pl. 9, figs. 4-7 (1861).

Xylolopes validus CAB. & HEIN. Mus. Hein. IV, 2, p. 108 (1863). —SALV.

Ucc. Born. p. 44 (1874).—SHARPE, Ibis, 1890, p. 6.

[Sandakan. Iris reddish orange.—C. F. A.]

51. *Chrysophlegma mentalis*.

Picus mentalis TEMM. Plan. Col. pl. 384.

Chloropicus mentalis MALH. Mon. Pic. II, p. 112, pl. 75, figs. 4, 5 (1862).

Callolophus mentalis SALV. Ucc. Born. p. 49 (1874).

[Suanlamba River. Iris brown.—C. F. A.]

52. *Chrysophlegma malaccensis*.

Picus malaccensis LATH. Ind. Orn. I, p. 241 (1790).

Chrysonotus miniatus EYTON, Proc. Zool. Soc. 1839, p. 106.

Callolophus malaccensis SALV. Ucc. Born. p. 50 (1874).

Chrysophlegma malaccense SHARPE, Ibis, 1890, p. 7.

[Kinabatangan River. Iris red.—C. F. A.]

53. *Thriponax javensis*.

Picus javensis HORSE. Trans. Linn. Soc. XIII, p. 172 (1831).

Dryopicus leucogaster MALH. Mon. Pic. I, p. 47, pl. 13, figs. 4, 5.

Thriponax javensis CAB. & HEIN. Mus. Hein. IV, Picidæ, p. 105 (1863).

—SALV. Ucc. Born. p. 52 (1874).—SHARPE, Ibis, 1890, p. 8.

[Sandakan. Iris red. Taken in large trees, bordering a clearing. — C. F. A.]

54. *Meiglyptes tukki*.

Picus tukki LESS. Rev. Zool. 1839, p. 167.

Phæopicus pectoralis MALH. Mon. Pic. II, p. 8, pl. 47, figs. 5, 6 (1862).

Meiglyptes tukki SALV. Ucc. Born. p. 57 (1874).—SHARPE, Ibis, 1890, p. 9.

[Bahala Island. Iris brown. Runs over the rough-barked trees, apparently searching for insects.—C. F. A.]

55. *Micropternus badius*.

Picus badius TEMM. Mus. Leyd.—SUND. Consp. Av. Pic. p. 91 (1866).

Phæopicus badius MALH. Mon. Pic. II, p. 6 (1862).

Meiglyptes badius SCLAT. Proc. Zool. Soc. 1863, p. 210.

Micropternus badius SALV. Ucc. Born. p. 58 (1874).—SHARPE, Ibis, 1890, p. 9.

[Sapagaya River. Iris brown.—C. F. A.]

FAMILY MEGALAIMIDÆ.

56. *Xantholœma duvaucelii*.

Bucco duvaucelii LESS. Trait. Orn. p. 164 (1831).

Xantholœma duvaucelii SALV. Ucc. Born. p. 38 (1874).—SHARPE, Ibis, 1890, p. 5.

[Sandakan. Iris brown. Legs greenish.—C. F. A.]

57. *Calorhamphus fuliginosus*.

Micropogon fuliginosus TEMM. Plan. Col. Texte, Liv. 83.

Calorhamphus sanguinolentus LESS. Rev. Zool. 1839, p. 139.

Calorhamphus fuliginosus MARSH, Mon. Cap. pl. 71 (1870-71).—SALV. Ucc. Born. p. 39 (1874).—SHARPE, Ibis, 1890, p. 6.

[Sandakan. Iris brown. Legs salmon.—C. F. A.]

FAMILY BUCEROTIDÆ.

58. [*Buceros rhinoceros*.

Malay name, *Luke-läng*.

Male. — Base of horn and mandibles, cutting edges of latter, and a narrow longitudinal line on side of horn, curving upward with the upturned

part in front, black; top and sides of horn down to the black line and basal portion of the upper mandible in front of the black, bright carmine; lower sides and front of upturned horn, upper mandible in front of carmine, and lower mandible in front of black—fading off into white toward the tips—bright yellow, almost Indian yellow; bare skin around eye, black. Iris red.

Female.—The black at base of horn and the narrow longitudinal line of black wanting. The cutting edges of mandibles and bare skin around eye pinkish salmon. Iris white.

There seems to be an exudation of yellowish oil which colors the white feathers of the abdomen. In cases where this part of the plumage needed washing, on account of blood stains, the yellow color almost entirely disappeared.

No information of its nesting habits could be obtained from servants or guides. They are abundant in those regions along the rivers where fruit trees occur, and their peculiar, sonorous notes can be heard at a considerable distance. Although these birds were numerous and could easily be located by their calls, they were difficult to procure. So far as wariness is concerned, they can put a Crow to shame, and it is very seldom that one can be approached within gun-shot, the most successful way being to lie in wait for them under a fruit tree. Owing to their striking colors they are very conspicuous objects in the trees, a fact of which they seem to be aware.

Their flight consists of several rapid wing beats, followed by majestic sailing, during which they gradually rise to a greater elevation. The general color being jet black, they are clearly outlined against the sky, the horn reminding one of a figurehead, and as with firmly set wings and outstretched necks they sail high overhead, they recall the appearance of a full-rigged ship with all canvas set, probably though more on account of their sturdiness than grace. The sound produced by their wings during flight is astonishingly loud and often betrays their presence to a collector.

As showing the extreme pneumaticity of the bones of this species, it may be stated that in one case a No. 5 shot passed clear through the humerus without breaking it.—C. F. A.]

59. *Anthrococeros convexus*.

Buceros convexus TEMM. Plan. Col. pl. 530. — SALV. Ucc. Born. p. 80 (1874).

Anthrococeros convexus ELLIOT, Mon. Bucer. pl. xii.

[Kinabatangan River. Iris dark red; eyelids black; bare skin around eye purplish blue; that at angle of jaws bluish flesh-color.

Commonly of wider distribution than the other species of Hornbills taken, being found on some of the small islands in Sandakan Harbor and near the coast as well as in the up river regions.—C. F. A.]

60. *Anorrhinus galeritus*.

Buceros galeritus TEMM. Plan. Col. pl. 520.

Anorrhinus galeritus SALV. Ucc. Born. p. 79 (1874). — ELLIOT, Mon. Bucer. pl. 42. — SHARPE, Ibis, 1890, p. 16.

[Sandakan. Iris deep wine red. Eyelids black. Skin above and behind eyes, and over angle of jaw, fleshy white. Other parts dark blue. Usually found feeding in the same trees as the last species, but less noisy and more stealthy in its movements.—C. F. A.]

FAMILY ALCEDINIDÆ.

61. *Alcedo meninting*.

Alcedo meninting HORSE. Trans. Linn. Soc. XIII, p. 172 (1821). — SALV Ucc. Born, p. 93 (1874). — SHARPE, Ibis, 1890, p. 18.

Alcedo asiatica SHARPE, Mon. Alced. pl. 5.

[Sandakan. Iris dark brown. Frequents small creeks which empty into the rivers or near river sources. It has the habit of sitting on some dead twig or snag a few feet above the surface of the water watching for its prey in true Kingfisher style.—C. F. A.]

62. *Halcyon coromanda*.

Alcedo coromanda LATH. Ind. Orn. I, p. 252 (1790).

Callialcyon coromanda SALV. Ucc. Born, p. 101 (1874).

Halcyon coromanda SHARPE, Mon. Alced. pl. 57; *id.* Ibis, 1890, p. 20.

[Sandakan. Iris brown. Bill and legs vermilion. The only specimens seen were taken along the hilly side of Sandakan Harbor.—C. F. A.]

63. *Halcyon pileata*.

Alcedo pileata BODD. Tab. Pl. Enl. p. 41 (1783).

Entomobia pileata SALV. Ucc. Born. p. 102 (1874).

Halcyon pileata SHARPE, Mon. Alced. pl. 62; *id.* Ibis, 1890, p. 20.

[Sapagaya River. Iris brown. Bill and legs red. Found along the larger streams, and, so far as observed, seems strictly piscivorous. Very wary, seldom allowing a boat to approach within gunshot.—C. F. A.]

64. *Halcyon concreta*.

Dacelo concreta TEMM. Plan. Col. pl. 346.

Caridagrus concretus SALV. Ucc. Born. p. 102 (1874).

Halcyon concreta SHARPE, Mon. Alced. pl. 83; *id.* Ibis, 1890, p. 21.

[Suanlamba River. Iris brown. Feet and legs yellow. The most common species of Kingfisher taken. Found in low, thickly wooded regions at considerable distances from streams.—C. F. A.]

65. *Nyctiornis amicta*.

Merops amictus TEMM. Plan. Col. pl. 310.

Nyctiornis amicta SALV. Ucc. Born. p. 91 (1874).—DRESSER, Mon. Mer. pls. 1, 2, p. 3 (1884-86).—SHARPE, Ibis, 1890, p. 18.

[Sandakan River. Iris golden yellow. Of general distribution but rather uncommon.—C. F. A.]

FAMILY CORACIIDÆ.

66. *Eurystomus orientalis*.

Coracias orientalis LINN. Syst. Nat. I, p. 159 (1766).

Eurystomus orientalis SALV. Ucc. Born. p. 105 (1874). — SHARPE, Ibis 1890, p. 21.

[Sandakan. Iris brown; bill, legs, and feet light red. A conspicuous bird, often seen perched on the top of some large dead tree in a clearing, occasionally leaving its place to make a short excursion after insects.—C. F. A.]

FAMILY CUCULIDÆ.

67. *Rhopodytes erythrognaethus*.

Phenicophæus erythrognaethus HARTL. Verz. Mus. Brem. p. 95 (1844).

Rhamphococcyx erythrognaethus SALV. Ucc. Born. p. 74 (1874).

Rhopodytes erythrognaethus SHARPE, Proc. Zool. Soc. 1873, p. 604; *id.* Ibis, 1890, p. 12.

[Suanlamba River. Iris pale blue in the male, golden yellow in the female. Skin around eye light maroon. Maxilla and tip of mandible pale green.—C. F. A.]

68. *Rhinortha chlorophæa*.

Cuculus chlorophæus RAFF. Trans. Linn. Soc. XIII, p. 288 (1822).

Rhinortha chlorophæa SALV. Ucc. Born. p. 69 (1874).—SHARPE, Ibis, 1890 p. 13.

[Suanlamba River. Iris dark brown. Skin around eye emerald green, bill darker.—C. F. A.]

69. *Zanclostomus javanicus*.

Phenicophæus javanicus HORSEF. Trans. Linn. Soc. XIII, p. 178 (1822).

Zanclostomus javanicus SALV. Ucc. Born. p. 75 (1874). — SHARPE Ibis, 1890, p. 13.

[Kinabatangan River. Iris red. Shot in coarse grass or rushes growing in swampy places.—C. F. A.]

ORDER PSITTACI.

FAMILY PSITTACIDÆ.

70. *Palæornis longicauda*.

Psittacus longicauda BODD. Tabl. Pl. Enl. 887 (1783).

Palæornis longicauda G. R. GRAY, Gen. Bds. II, p. 410 (1846). — SALV. Ucc. Born. p. 22 (1874). — SHARPE, Ibis, 1877, p. 9; *ib.* 1890, p. 1.

[Sandakan River. The only specimens seen were in an old clearing where they alighted on the tops of some high trees left standing. Occasionally several would start off together, flying very swiftly as they circled about, keeping up a continual chatter, and then re-alight.—C. F. A.]

71. *Loriculus galgulus*.

Psittacus galgulus LINN. Syst. Nat. I, 150 (1766).

Coryllis galgulus FINSCH, Die Papag. II, p. 699 (1868).

Loriculus galgulus SALV. Ucc. Born. p. 26 (1874). — SHARPE, Ibis, 1890, p. 1.

[Sandakan River. Iris brown. Apparently not common.—C. F. A.]

ORDER ACCIPITRES.

FAMILY STRIGIDÆ.

72. *Ketupa ketupa*.

Strix ketupa HORSF. Trans. Linn. Soc. XIII, p. 141 (1821).

Ketupa javanensis LESS. Trait. Ornith. p. 114 (1831). — SALV. Ucc. Born. p. 20 (1874). — SHARPE, Cat. B. p. 8 (1875).

Strix ceylonensis LATH. (*nec* GMEL.) Ind. Orn. I, p. 52, sp. 3 (1790). — TEMM. Plan. Col. pl. 74.

[Suanlamba River. Iris yellow. Malay name, *Boor'-ung han'-tu*. The Malays of the country are quite timid if, while out at night, the notes of this Owl are heard, as they think the spirits of the departed manifest their presence through the agency of these birds.—C. F. A.]

73. *Syrnium myrtha*.

Ciccaba myrtha BON. Consp. Av. I, 44. — SALV. Ucc. Born. p. 21 (1874).

Myrtha sumatrana BON. Rev. Mag. Zool. 1854, p. 541.

Syrnium myrtha SHARPE, Cat. B. p. 264 (1875).

A single specimen of *Syrnium* I refer to *S. myrtha* described by Bonaparte (*l. c.*), as it seems considerably larger than *S. leptogrammicum*, and differs in having the breast dark chestnut brown barred with black, and the entire under parts white barred narrowly with black, agreeing in these respects with Bonaparte's description. Total length about 17 in.; wing, 12½; tail, 7½.

[Sapagaya River. Iris brown. Only one specimen was seen, which was taken near a path cut through a dense jungle.—C. F. A.]

FAMILY FALCONIDÆ.

74. *Spilornis pallidus*.

Spilornis pallidus WALL, Ibis, 1872, p. 363. — SHARPE, Cat. B. I, p. 290 (1874).

Very closely resembling *S. bacha* Daud., but apparently a smaller bird.

[Iris, lores, and legs yellow. Found sitting on stumps in old clearings, usually with the crest erect.—C. F. A.]

75. *Butastur indicus*.

Falco indicus GMEL. Syst. Nat. Suppl. p. 32 (1787).

Falco poliogenys TEMM. Plan. Col. pl. 325.

Butastur indicus SHARPE, Cat. B. I, 297 (1874); *id.* Ibis, 1889, p. 72.

[Sandakan. Iris light brown. Legs yellow. Common in open places.—C. F. A.]

ORDER COLUMBÆ.

FAMILY TRERONIDÆ.

76. *Treron nasica*.

Columba curvirostra GMEL. Syst. Nat. I, p. 777 (1788).

Treron nasica SCHLEG. Tidgsch. Dierk. I, p. 67 (1863).—SALV. Ucc. Born. p. 283 (1874).

[Sandakan. Iris dark green. Skin around eyes and bill, green. Lores and feet carmine. Found in small flocks, feeding on berries, etc.—C. F. A.]

77. *Treron olax*.

Columba olax TEMM. Plan. Col. pl. 241.

Treron olax SALV. Ucc. Born. p. 289 (1874).

[Suanlamba River. Iris pale yellow. Similar in habits to *T. nasica*, preferring open places where fruit-bearing bushes grow.—C. F. A.]

78. *Ptilopus jambu*.

Columba jambu GMEL. Syst. Nat. I, p. 784 (1788).

Ptilopus jambu SALV. Ucc. Born. p. 289 (1874).—ELLIOT, Proc. Zool. Soc. 1878, p. 554.—SHARPE, Ibis, 1889, p. 134.

[Suanlamba River. Iris golden yellow. Usually found on the ground in dense jungle. When startled it rises with a strong noisy flight, perhaps to stop an instant on a low branch, take a hurried look at the intruder, and then disappear. It seems to feed on fallen fruit knocked off by monkeys, Hornbills, etc.—C. F. A.]

79. *Carpophaga ænea*.

Columba ænea LINN. Syst. Nat. I, p. 283 (1766).

Carpophaga ænea SALV. Ucc. Born. p. 290 (1874).—SHARPE, Ibis, 1890, p. 134.

[Kinabatangan River. Iris and legs carmine. This fine Pigeon is very common and of general distribution. It may usually be found feeding in the same trees with the Hornbills, and what with the noise of their wings as the members of a large flock fly from branch to branch and the constant rain of the fruit which is knocked off, they can be heard at a considerable distance. Sometimes while feeding, a monkey will go dashing toward them, causing them to rise with a whirl, but after circling about a few times they re-alight in a safe place. As monkeys are numerous in Borneo, and many of them actually feed in the same trees with the Pigeons, it seems, considering the abundance of the latter, that in this locality at least monkeys do not seriously interfere with them.—C. F. A.]

ORDER GALLINÆ.

FAMILY PHASIANIDÆ.

So. [*Argus grayi*.

Malay name, *Chow-h-o-i*. Of pretty general distribution, seeming to prefer the hilly, broken regions. Although this bird may frequently be heard, it is very difficult to procure, either by means of the gun or in snares which as a rule are very effective in taking other gallinaceous birds and small mammals found in the same regions. The Malay name somewhat resembles its notes, when the second syllable is strongly accented and prolonged. The tone of its voice is much like that of our domestic peacock.—C. F. A.]

81. *Euplocomus ignitus*.

Euplocomus ignitus LATH. Ind. Ornith. p. lxi (1801). — ELLIOT, Ibis, 1878, p. 411.

Euplocomus nobilis SCLAT. Proc. Zool. Soc. 1863, p. 119, pl. xvi. — ELLIOT, Mon. Phas. pl. xxvii (1872). — SALV. Ucc. Born. p. 306 (1874).

[Kinabatangan River. Iris red. Bare skin of head purplish blue. Malay name, *Eidam-u-tan*. Common in up-river regions. The specimens taken were caught in snares, as used by the Malays of the country. — C. F. A.]

FAMILY PERDICIDÆ.

82. *Arboriphila charltoni*.

Perdix charltoni BLYTH, Ann. Mag. Nat. Hist. XVI, p. 230 (1845).

Arboricola charltoni HUME & MARSH, Game B. Ind. II, p. 93 (1879).

Arboriphila charltoni SHARPE, Ibis, 1890, p. 140.

[Sapagaya River. Iris brown. Legs yellowish olive. A quiet bird, inhabiting the river districts. Not shy, so that the collector does not need to resort to the snare in order to obtain specimens, as opportunities for shooting are rather common. Most of the specimens procured, however, were taken from snares set for other species. — C. F. A.]

83. [*Rolulus roulroul*].

Iris brown; eyelids and legs carmine. This beautiful species seems to prefer the level districts near the rivers, where its pleasing, powerful, liquid whistle may be heard from morning until night. Being less shy than the Pheasants, it is not unfrequently seen in small flocks running through the underbrush. When frightened, the males elevate the crest and carry their bodies nearly erect, as they make their short runs, suddenly coming to a standstill with a jerk, after the fashion of our Quails. — C. F. A.]

ORDER LIMICOLÆ.

FAMILY CHARADRIIDÆ.

84. *Eudromias veredus*.

Cursorius isabellinus HORSF. (nec TEMM.) Trans. Linn. Soc. XIII, p. 137 (1821).

Charadrius veredus GOULD, Proc. Zool. Soc. 1848, p. 38.

Charadrius xanthochilus BLYTH, Ibis, 1865, p. 34.

Eudromias veredus WALD. Trans. Zool. Soc. VIII, p. 88 (1872).—SALV.

Ucc. Born. p. 315 (1874).

[Bahala Island. Iris brown.—C. F. A.]

85. *Ægialitis peronii*.

Charadrius peronii (TEMM.) BON. Compt. Rend. XLIII, p. 417, sp. 68 (1856).

Ægialitis peronii WALD. Trans. Zool. Soc. VIII, p. 90, pl. 10, fig. 2. (1872).—SALV. Ucc. Born. p. 315 (1874).—SHARPE, Ibis, 1890, p. 142.

[Bahala Island. Iris brown.—C. F. A.]

86. [*Actitis hypoleucos*.

Bahala Island. Iris brown. Not uncommon.—C. F. A.]

ORDER ALECTORIDES.

FAMILY RALLIDÆ.

87. *Rallina fasciata*.

Rallus fasciata RAFF. Trans. Linn. Soc. XIII, p. 328 (1822).

Gallinula euryzona TEMM. Plan. Col. p. 417.

Rallina fasciata G. R. GRAY, Gen. B. p. 120 (1855).—SALV. Ucc. Born. p. 337 (1874).—SHARPE, Ibis, 1890, p. 145.

[Sapagaya River. Iris and eyelids red; legs reddish. Only one specimen taken, which was shot in a dense second growth in the swampy part of an old clearing.—C. F. A.]

NOTE.—Mr. F. A. Lucas of Washington informs me that he has received from Mr. Adams two skeletons of *Cypselus subfucatus*. The locality in Borneo whence they came is not given. This information was received too late to enable me to insert the species in its proper place.—D. G. E.

THE HABITS OF THE GOLDEN PLOVER (*CHARADRIUS DOMINICUS*) IN MASSACHUSETTS.

BY GEORGE H. MACKAY.

AMONG the water birds which annually migrate along the coast of New England, none to me possesses greater interest than *Charadrius dominicus*, the American Golden Plover. One reason for this is its prolonged migration, extending from the shores of the Arctic Ocean to the Argentine Republic, and probably to Patagonia, a distance of nearly seven thousand miles, during which it apparently makes no stop after leaving Nova Scotia, unless compelled to halt by storms or hurricanes, until it reaches its destination. It is while making this migration that their appearance is so eagerly watched for by the many sportsmen on the New England coast, the great uncertainty of their landing in any considerable numbers adding much to the interest and importance of their capture. The reason they are not now as abundant as formerly, is, first, the absence of suitable feeding ground, and secondly the eagerness with which they are pursued, allowing them no opportunity to become attached to any one locality. Civilization has encroached upon and absorbed so many of the fields bordering on the coast, to which they used to resort, that there is little room now left for them.

On the Island of Nantucket I notice a very great change in the amount of ground suitable for them, there being now not more than one-quarter as much as formerly. This in part is due to the increase of the pine trees, scrub oak, bushes, and beach grass which have greatly encroached upon the open fields, and in part to the absence of considerable numbers of sheep and cattle which formerly roamed at large and kept down the grass; for the Golden Plover dislikes to alight or run in grass which is high enough to touch the feathers of the breast. Another cause is the fact that the sportsmen go out to shoot them at the commencement of the storm which causes them to seek land, and follow them up unceasingly until a change of weather gives the harassed birds an opportunity to continue their interrupted migration. This mode of procedure is just the reverse of what prevailed in former times, when few people pursued them. They were then

allowed to remain undisturbed on alighting, and the first comers called down others that were passing; they thus became accustomed and attached to certain localities, and as a rule remained in varying numbers on the Island of Nantucket until late into November. As many of the same birds doubtless pass over the same ground year after year, they naturally shun the localities where they have been harassed, and becoming leaders of the migratory flocks, do not stop unless compelled by stress of weather. Of late years it has become quite evident that they have no intention of stopping on the New England coast after leaving Nova Scotia, as their course is considerably outside of it (two hundred miles or more). Their presence here, therefore, is purely the result of tempestuous weather, as the occurrence of south-easterly or north-easterly storms, thunder and lightning with rain, or thick fog with a south-west wind, while they are on their passage, by which they are driven from their course, confused, and deflected to the westward; in which event they pass along the New England coast, and over the outlying islands and promontories. They are then eagerly pursued and many killed.

When in Massachusetts they frequent the extensive marshes, and the large tract known as the common pasture near Newburyport; on Cape Cod they seem to prefer the long reach of sandy hills, old fields where the grass is short and the vegetation scanty, sand flats left by the receding tide, ploughed fields, and any burnt tracts which are clear of trees and bushes. On Nantucket Island they mostly prefer the south and west portions of the Island, where there are extensive and undulating plains interspersed with fresh ponds. It is here that I have particularly observed *C. dominicus* during the past sixteen years. When on the ground they run rapidly and gracefully, and soon scatter on alighting. After running a few yards they suddenly stop, hold the head erect, and look around, all the movements being very quick. In feeding, they seem to strike at the object with a motion that reminds one of a Loon or Grebe commencing to dive.

Various authorities state that along the Atlantic coast the food of the Golden Plover consists principally of grasshoppers, on which they become very fat. I can only say, in answer to this statement, that in my experience I have never seen them eat any, and I have watched them when on the ground quite near, as well as through a strong a field glass. I have also examined

the stomachs of a good many which I have shot on Nantucket, and have never found any grasshoppers in them, nor in fact anything but crickets (which seem their principal food there), grass seeds, a little vegetable matter, like seaweed, coarse sand, and small stones. I have also frequently shot them with the vent stained purple, probably from the berries of the *Empetrum nigrum*. I have rarely seen a poor or lean bird that landed while making the southern migration. While they are not all in the same condition, they are, as a rule, quite fat. The eye is dark hazel, very lustrous, and appealing, and is their most beautiful feature to my mind. Those birds killed soon after landing have the bottoms of their feet quite black; after living on the Island awhile, they turn whitish. I have no reason to offer for this change.

Their local names along the coast are numerous, and among them are Greenback, Palebelly, Palebreast, Greenhead, Bullhead, Toadhead, Frostbird, Blackbreast, and Threetoes.

When scattered over considerable ground, as is usual after they have been any length of time on their feeding ground, every bird apparently on its own hook, if alarmed, a note is sounded; they then rise so as to meet as soon as possible at a common centre, which gained, away they go in a compact body. When high up in the air, flying on their migration, I have often noticed the flocks assume shapes that reminded me of the flight of Geese; they also fly in the form of a cluster, with one or more single lines out behind; also broadside in long straight lines, with an apparent velocity of about one and a half miles a minute, measured by the eye as they pass along the headlands. When flying near the ground they course over it at a high rate of speed, in every variety of form, the shape of the flock constantly changing, and frequently following every undulation of the surface, stopping suddenly and alighting when a favorable spot is noticed. They are extremely gregarious, and I have had the same flock return to my decoys as many as four times, after some of their number had been shot each time. When approaching the decoys every bird seems to be whistling, or, as I have often expressed it, uttering a note like *coodle, coodle, coodle*. During the middle of the day they are fond of seeking the margins of ponds, where they sit quietly for a long time, if undisturbed. When disturbed they are almost certain to return, in a short time, to the same spot from which they

have been started, that is, if they have been resting or feeding there any length of time. When suspicious, it is very difficult to approach, decoy, or call them; if not harassed, they are as a rule quite tame and gentle, and can be easily driven up to with horse and wagon.

The young birds, or 'Palebellies' as they are called by the local gunners, are inferior in size to the old black-and-white-breasted birds. Their plumage is ashy gray all over, relieved with spots of pale yellow on the top of the head, back, and rump, they having none of the bolder and well-defined markings of the old birds, in which the white line of the forehead, running over and back of the eye down each side of the neck, is the most prominent at a distance. These young birds invariably appear wild and wary, much more so than the old ones. They are also very erratic in their movements and flight when with us. They usually will not pay so much attention to the decoys or call-whistle as do the old birds; and I have seen them, when very shy and after being disturbed, mount up into the air and nearly turn over on their backs while flying with great velocity. It is a noteworthy fact that, when a flock of these young birds is approaching, no dependence can be placed on their movements. They may sometimes sweep down within a few yards of the sportsman, passing with great rapidity over his head, all scattered; or down close to the stand and then up into the air; or they may turn suddenly. My experience has taught me not to wait, as is my custom with the older birds, to get them together before shooting, but to fire at them whenever and wherever I can, if they are within range. The older birds rarely indulge in any similar antics. These young birds seem to migrate by themselves, and at a later date than the old ones, not appearing in New England, as far as my experience shows, till from one week to four after the arrival of the older black-and-white-breasted birds. I have notes of one such landing, on the Island of Nantucket, as late as October 1, 1882. This, however, is the latest date I have ever known.

While I have continually shot the young birds on Nantucket, and in other parts of Massachusetts, their arrival is a much more uncertain event than that of the older birds, there being some years when I have seen none, and others only a few. I have never known a year when they were anything like as numerous as I have seen the older birds.

It is unusual to see any but scattering birds before the tenth of September: the years when they are not seen they undoubtedly pass outside of the coast line, with favorable weather. In order to convey some idea of the date when *C. dominicus* annually makes its appearance, I copy from the notes of a friend the dates of its arrival on Cape Cod, from 1858 to 1875, and on Nantucket from the latter year until 1890 from data of my own, thus covering a period of thirty-two years, there being no record for 1876.

- 1858. First birds shot Aug. 31; last birds shot Oct. 19.
- 1859. First birds shot Aug. 29; last birds shot Sept. 25.
- 1860. September. Some shooting during the month.
- 1861. First birds shot Sept. 5; last birds shot Oct. 12.
- 1862. No birds.
- 1863. No birds of any account until Sept. 5, when there was an immense flight.
- 1864. Some birds in September.
- 1865. No flight.
- 1866. A few birds in September; no flight.
- 1867. A flight Aug. 31; last birds shot Oct. 20.
- 1868. September. Only a few this year.
- 1869. No flight this year, and only a few birds killed.
- 1870. A flight Aug. 29; fair shooting until Oct. 6.
- 1871. First Plover shot Aug. 25; not a very good year.
- 1872. First birds shot Aug. 29. Hard southeast rain storm on night of 29th; small flight.
- 1873. First birds shot Aug. 23. A good many birds on Aug. 29.
- 1874. Scarcely any.
- 1875. First shot Aug. 30.
- 1877. First birds shot Aug. 27. Severe rain storm night of Aug. 26; small flight of Plover and Eskimo Curlew. Last birds shot Oct. 5.
- 1878. First birds shot Aug. 26; rain the night before; some Plover and Eskimo Curlew landed. Last birds shot Oct. 22.
- 1879. First birds shot Aug. 26; a number of Plover landed the night before. There were three or four small flights in September. Last Plover shot September 29.
- 1880. First Plover shot Aug. 26. Saw three on the 22d. Sept. 7, a large flight of old birds; shot 108 on the 7th and 8th. Sept. 9: raining and blowing last night; a flight went over the town of Nantucket, but did not stop. Last birds shot Sept. 28.
- 1881. First birds shot Aug. 16. Small flight Aug. 19; 300 to 400 birds landed; weather foggy; wind northeast; two heavy rain squalls in the afternoon. Sept. 2: a large flight of Plover and Eskimo Curlew landed last night; wind northeast and weather thick. No young birds this year. Last birds shot Sept. 10.

1882. First birds shot Aug. 22. Last birds shot Oct. 3. A great many *C. dominicus* passed over without landing during the week prior to Aug. 30. Sept. 25: last night a considerable flight of young birds; wind north-east, light rain; afterwards storming hard. Sept. 30: quite a flight of young birds landed in northeast rain storm; shot 50. Oct. 2: about 400 young birds landed on east end of Nantucket.

1883. Aug. 25: last night and to-day a large number of *C. dominicus* and Eskimo Curlew landed, in about equal numbers; a severe northeast storm. First flock of *C. dominicus* arrived Aug. 16.

1884. First birds shot Aug. 26. On July 28 John M. Winslow shot a lone *C. dominicus* which was emaciated, the earliest record of one being taken on Nantucket Island. Aug. 31, large flight went by in clear weather in the afternoon; wind light, southeast. The poorest year I have ever known.

1885. Aug. 23, first birds shot. Heard of two killed on Aug. 17. Last birds shot Sept. 23. Had only killed half a dozen young birds up to Sept. 1.

1886. First birds shot Aug. 22. August 24, a severe northeast storm with rain and lightning. The largest flight for a number of years; some two thousand birds landed. Only two young birds shot up to Sept. 12. Last birds shot (7 young birds) on Sept. 27.

1887. Aug. 25: considerable number of old birds landed; northeast rain storm last night; all gone the next day. First birds shot Aug. 28. Did not see a young bird this year.

1888. August 28: thunder shower last night; wind about south; a flight passing over the town; only a few scattering birds landed, as weather cleared at 10.30 P. M., with wind west by north; first Plover shot. Sept. 2: a small flight, but few landed; wind westerly, foggy; light rain at times until 7 A. M when it cleared; for the past week large numbers of *C. dominicus* have been passing the Island every night; scarcely any landed. Last birds shot Sept. 24. No young birds this year.

1889. First birds shot Aug. 20. Quite a flight Aug. 23, but none landed. Sept. 11, small flight of *C. dominicus*; both old and young birds, and also some Eskimo Curlew. The poorest year I have ever known.

1890.* First birds shot Aug. 25. August 22 and 26 a flight; none stopped on either date; on the 26th the wind was south, raining. Only about fifty birds altogether shot on the Island. This makes the poorest yearly record up to date. Last birds shot Sept. 29. About half of above birds killed were young.

It will be noticed from the foregoing that the older birds of this species seem to come along with much more regularity than

* I have since learned that there was a flight of Golden Plover along Cape Cod Aug. 23, 1890. About 2500 birds (estimated) were seen, flying rather low; only a few scattering birds stopped, although the weather was thick, rainy, wind southeast; they were headed south. None were noted on Nantucket on this date.

the younger ones. It would seem to require certain conditions of weather, and time of migration to make the young birds land on our coast, and the rare occurrence of these conditions must account for the irregularity of their appearance.

The question may be asked why the Golden Plover remain, or come here at all. The answer is that they do not remain any longer than is absolutely necessary, and land only under stress of weather; for the moment a clear streak is visible on the western or northern horizon, at the end of the stormy weather which has forced them to land, and a few puffs announce that the wind is soon to change and the weather to clear, almost every bird takes flight from these inhospitable shores, mounts high into the air, and steers for the South; where many may have been yesterday, none remain today. When tired, in moderate weather, they have been known to alight on the ocean; at least so I have been informed by some of the men on the South Shoal Light-ship, which is anchored twenty-five miles off the south side of Nantucket Island.

J. P. Giraud, Jr., in his 'Birds of Long Island' states that the Golden Plover arrives there in the latter part of April, on the way to the North. I have, however, never seen any recorded, and have heard of but three *C. dominicus* being taken, in New England in the spring, one being on Nantucket, one at Dennis, Cape Cod, and one at Scituate, Mass. Personally I have never met with it at this season of the year.

As far as my observation shows on the Island of Nantucket, the Golden Plover usually seeks land about dusk and during the first half of the night. I can recall but three occasions when they landed during the daytime, and on two of those in very inconsiderable numbers. It is usual several times during the migrating period to hear them whistling as they pass low down over the town of Nantucket; but on these occasions, unless it is storming hard, they do not stop, but pass on, if the wind is fair (northeast). I have been many times disappointed on driving over the Plover ground at daylight on the following morning to find that no birds had stopped. In other words, it is a most difficult matter to 'hit the flight,' for it requires a combination of circumstances and weather which rarely happens, to enable one to obtain any number of these birds on the Atlantic coast.

In regard to the numbers of these birds formerly, and at the

present time, I would say that it is extremely difficult to arrive at any correct conclusion, this arises from the fact that the migration almost always passes by, or over the Island, after dark, and our means of judging is by comparison with others of the number of flocks heard whistling as they flew overhead. It is however certain that for a number of years fewer birds have stopped on the coast than formerly, and for a shorter period. We are, however, liable any year, when all the conditions are favorable, to have an immense landing.

To those interested in this direction I give the following result of some inquiry I made recently of two game dealers in Boston. About four years ago the shipment of Golden Plover, Eskimo Curlew, and Bartramian Sandpipers first commenced in the spring, and it has been on the increase up to date. Last spring (1890) these two firms received from Nebraska (principally), Saint Louis, and Texas (Fort Worth) *twenty barrels* of birds, one third of which were Golden Plover, two thirds Bartramian Sandpipers; *eight barrels* of Eskimo Curlew; *twelve barrels* of Eskimo Curlew and Golden Plover. As there are *twenty-five* dozen Curlew, and *sixty dozen* Plover each to a barrel, it will be realized what this means, if other large cities are similarly supplied. All were killed on their northern migration to their breeding grounds. Therefore while we may not be able now to answer the question: are they fewer than formerly, we shall be ably fitted to do so in a few years.

A LIST OF BIRDS OBSERVED AT SANTAREM. BRAZIL.

BY CLARENCE B. RIKER.

With Annotations by Frank M. Chapman.

(Continued from Vol. VII, p. 271.)

76. *Pipra aureola flaviceps* (Sch.).—Two adult males taken July, 1887, in low fruit-bearing trees growing in a semi-palm forest.

[I refer these specimens to *flaviceps*, as both exhibit a white spot on the outer rectrix. They are, however, indistinguishable from a Cayenne specimen.—F. M. C.]

77. *Pipra rubricapilla* Temm.—Common and gregarious.

78. *Chiroxiphia pareola* (Linn.).—Common in the second growth of the lowlands; not seen on the 'mountain'.

79. *Manacus manacus* (Linn.).—Common about campos and lowlands: not seen on the 'mountain.' In flying they make a humming noise with their wings and a cracking sound with their bills, the latter resembling the sound produced by the striking together of two pebbles.

80. *Heterocercus flavivertex* Pelz.—An immature male taken June 4, 1887.

81. *Tityra cayana* (Linn.).—A male taken July 15, 1887.

82. *Tityra semifasciata* (Spix).—A male and female taken in June, 1887.

83. *Tityra albitorques* Du Bus.—A male taken July 15, 1887. These birds frequent the treetops. The notes of this species and the two preceding are distinguished by a guttural, clucking sound.

[84. *Hadrostromus minor* (Less.).—A male taken by Smith, March 26 1889.—F. M. C.]

85. *Pachyrhamphus atricapillus* (Gm.).—A female taken July 4, 1887.

[86. *Pachyrhamphus rufus* (Bodd.).—A female taken by Williams has the grayish nuchal band very narrow but complete.—F. M. C.]

[87. *Pachyrhamphus cinereus* (Bodd.).—"Santarem, June 5; common near the town.*]

88. *Lathria cinerea* (Vieill.).—Common on the 'mountain.' Their call, which resembles the syllables *we-we-you*, the two former with a rising, the latter with a falling, accent, was never heard except when the birds were startled by the report of a gun.

89. *Lipaugus simplex* (Licht.).—Common in the lowlands.

[90. *Attila* sp. *incog.*—A female collected by Williams is apparently closely related to *A. citriniventris* Scl. The upper surface agrees with Sclater's description of the male of that species, but the lower parts are quite uniformly cinnamomeous, with the abdomen scarcely lighter than the breast, and the chin fulvous, not cinereous. It is not improbable that this bird may be the as yet undescribed female of *A. citriniventris*.—F. M. C.]

91. *Attila viridescens* Ridgw.

Attila viridescens RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 522.

A male taken on the 'mountain' July 5, 1887.

[Differs from the type of *A. sclateri* in having the belly unmarked with yellow or yellowish green and in the almost total absence of this color from the flanks.—F. M. C.]

92. *Cotinga cærulea* (Vieill.).—A male taken July 4, 1887. Said by the natives to be common in the fall, feeding on the fruit trees of the lowlands.

93. *Cotinga cayana* (Linn.).—One male taken.

94. *Querula cruenta* (Bodd.).—Two males and a female taken respectively on July 4 and 5, 1887, in a dense forest on the 'mountain' where

they were found feeding with *Cassicus persicus* amongst the treetops; their note was a strange grunting sound.

[95. *Gymnoderus fœtidus* (Linn.).—A specimen taken by Smith, April 15, 1889.—F. M. C.]

96. *Furnarius pileatus* Scl. & Salv.—Common on mud banks near the river, where it was probably feeding on ants. It has a characteristic twitch of the tail resembling the movement of a Sandpiper.

[An adult male taken June 17, 1887, is the second recorded specimen of this species, the type of which was collected at Santarem.—F. M. C.]

[97. *Furnarius minor* Pelz.—One specimen collected by Smith in February, and a male and female collected by Williams in July. The female resembles the male in coloration, but exhibits what is apparently a trace of albinism in having two upper primary coverts of the right, and three of the left, wing, pure white.—F. M. C.]

[98. *Synallaxis guianensis* (Gm.).—A male taken by Williams, June, 1883.—F. M. C.]

99. *Synallaxis cinnamomea* (Gm.).—Common amongst wild rice about the marshes and river.

[100. *Synallaxis mustelina* Scl.—A male taken by Williams, May, 1883. Not before recorded from the Lower Amazon.—F. M. C.]

101. *Synallaxis rutilans* Temm.—Common; found running about fallen leaves in semi-palm forests.

102. *Berlepschia rikeri* Ridgw.

Picolaptes rikeri RIDGW., Proc. U. S. Nat. Mus., IX, 1886, p. 523.

Berlepschia rikeri RIDGW., ibid., X, 1887, p. 151.—SCL., Ibis, 1889, p. 351, pl. xi.

The single specimen collected of this species was found August 1, 1884, near the border of a palm forest, creeping about amongst the branches of a palm.

103. *Philydor erythrocerus* (Pelz.).—A female taken on the 'mountain' July 15, 1887, resembled a Thrush in its movements.

104. *Glyphorhynchus cuneatus* (Licht.).—Common about houses and clearings.

105. *Dendrocincla fuliginosa* (Vieill.).

Dendrocincla rufo-olivacea RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 493.—SCL., Ibis, 1889, p. 353.

Dendrocincla fuliginosa SCL., Cat. Bds. B. M., XV, 1890, p. 165.

A male and female taken on the 'mountain' June 15 and 16, 1887.

[With Mr. Ridgway I have been unable to compare these specimens with *D. fuliginosa* (Vieill.), and I therefore follow Mr. Sclater, who has examined the type of *D. rufo-olivacea*, in placing them under Vieillot's species.—F. M. C.]

106. *Dendrocincla castanoptera* Ridgw.

Dendrocincla castanoptera RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 494.

Dendrocincla merula SCL., Cat. Bds. B. M., XV, 1890, p. 168.

A male and female taken June 15, 1887, in a forest in the lowlands, feeding in advance of an army of ants.

107. *Dendrocolaptes certhia* (Bodd.).

Dendrocolaptes obsoletus RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 527, nec LICHT., Abh. Akad. Berl., 1819, p. 203.

Dendrocolaptes certhia SCL., Cat. Bds. B. M., XV, 1890, p. 173.

A male and female taken July 1, 1887, in the lowlands.

[Mr. Sclater, who has examined the type of *D. obsoletus* Ridgw., considers it inseparable from *D. certhia* Bodd. Of the last-named species I have no examples for comparison, and as in any case the name *obsoletus* is preoccupied, I follow Mr. Sclater in referring these specimens, for the present at least, to *D. certhia*.—F. M. C.]

108. *Nasica longirostris* (Vieill.).—Seen only about the river, where it was common.

109. *Dendroornis susurrans* (Fard.).

Dendroornis fraterculus RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 526,

Dendroornis susurrans ELLIOT, Auk, 1890, p. 171.

A male taken June 10, 1887, in a semi-palm forest twenty miles from the river.

[Mr. Elliot's examination of the type and single known specimen of *D. fraterculus*, resulted in his referring it to *D. susurrans* (Jard.) and with this decision it may be well to agree until further material shall more strongly urge the claims of *fraterculus* to recognition.—F. M. C.]

[110. *Dendroornis multiguttata* (Laf.).—Three apparently adult females taken by Williams in June and July, 1883. Mr. Elliot in his recent review of the genus *Dendroornis* (Auk, 1890, p. 175) mentions these specimens one of which, taken July 30, he considers typical of *D. multiguttata*, while the remaining two are said to "probably merely represent a reddish phase of plumage, which I have noticed occurs sometimes with other species of the genus." This view may account for the marked differences in coloration which exist between the single July and the two June specimens, but it does not so well explain the differences shown by the following measurements (in inches):

		Wing	Tail	Tarsus	Bill from Nostril
July 30, 1883,	♀	3.85	3.25	.82	.74
June,	♀	3.40	2.70	.75	.70
"	♀	3.45	2.86	.74	.62

It is not improbable that the largest specimen may have been incorrect ly sexed, when these differences of size and coloration might be considered sexual. At any rate the present material is not conclusive, and further specimens alone will decide whether these two small, reddish birds are specifically identical with *D. multiguttata*.—F. M. C.]

111. *Dendroornis eytoni* SCL.—A single specimen taken on the 'mountain' July 4, 1887.

112. *Dendroplex picus* (Gm.).—A female taken June 13, 1887.

113. *Picolaptes layardi* SCL.—A single specimen taken on the 'mountain, July 4, 1887.

114. *Cymbilanius lineatus* (Leach).—Three specimens taken in June, 1887.

[115. *Thamnophilus melanurus* Gould.—A female taken by Smith January 26, 1889.—F. M. C.]

116. *Thamnophilus simplex* ScL.—A male taken June 4, 1887.

[In general coloration this specimen agrees exactly with the description and plate of *T. simplex* (Ibis, 1873, p. 387, pl. 15), but the cap is distinctly blackish and not concolor with the plumbeous back as it is stated to be in *T. simplex*. The type of *simplex*, however, taken in January, may have been a bird of the year, having the black cap as yet undeveloped.—F. M. C.]

117. *Thamnophilus luctuosus* (Licht.).—A male and female taken near the border of streams.

[The female does not agree with Tschudi's description of the female of this species (Fauna Per., p. 172), but differs from the male only in being slightly smaller and in having the cap chestnut instead of black. Of three specimens collected by Smith one has the cap chestnut, in the others it is black. There is no indication of sex on the labels, but the chestnut-capped bird is the smallest of the three.—F. M. C.]

[118. *Thamnophilus nigrocinereus* ScL.—A male taken by Smith, January 23, 1889.—F. M. C.]

119. *Thamnophilus nævius* (Gm.).—A male taken June 13, 1887, in the lowlands.

120. *Thamnophilus ambiguus* Sw.—A female taken June 13, 1887, in the lowlands, climbing about vines, had a nervous, twitching movement of the tail.

121. *Thamnophilus inornatus* Ridgw.

Thamnophilus inornatus RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 522.

A male taken June 30, 1887, amongst the vines and underbrush of a dense forest on the 'mountain.'

[Agrees in size and general coloration with a specimen of *T. murinus* Pelz. from Merumé Mountains, British Guiana (Whitely). It may be distinguished from that species, however, by the absence of apical spots on the wing-coverts and tail; and the concealed white interscapular spot is also wanting.—F. M. C.]

122. *Thamnophilus radiatus nigricristatus* (Lawr.).—A male taken in the lowlands July 15, 1884.

[While not fully adult, this specimen is sufficiently mature for comparison with the types of *nigricristatus* with which, allowing for the difference in age, it agrees.—F. M. C.]

123. *Myrmotherula axillaris melanogastra* (Spix).—[Comparison of the four specimens in the Riker collection with *M. axillaris* from Bogota and *M. a. melanogastra* from Bahia, prove them to be much nearer the latter than the former. In the coloration of the dorsal surface they exactly agree with the Bahia bird, but in the color of the flanks and tip-ping of the tail-feathers are evidently intermediate between it and true *axillaris*. A male taken June 16, 1887, has the feathers of the entire

breast pure white for three fourths their basal length, the apical portion being of the normal black.—F. M. C.]

[124. *Myrmotherula cinereiventris* Scl.—A male taken by Williams June 25, 1883.—F. M. C.]

125. *Dichrozona zonota* Ridgw.

Dichrozona zonota RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 524.

A male taken July 4, 1887.

[126. *Formicivora grisea* (Bodd.).—A male taken by Williams, June, 1883, and a female by Smith without date of capture.—F. M. C.]

[127. *Formicivora rufa* (Wied).

Thamnophilus rufater LAFR. & D'ORB., Syn. Av., p. 12 (Mag. de Zööl., 1837).

Formicivora rufa ALLEN, Bull. A. M. N. H., II, 3, 1889, p. 253.

[A male taken by Williams is slightly darker above than Chapada, Mitto Grosso, specimens, and the feathers of the head are centrally streaked with black. This record apparently extends the range of this species from Pernambuco to the Lower Amazon.—F. M. C.]

128. *Hypocnemis lugubris* (Cab.).—An adult male taken July 11, 1887, in the underbrush of the lowlands.

[A male taken by Williams, June 25, 1883, is not fully adult; the black feathers of the throat and sides of the neck have whitish tips and there are traces of brown throughout the plumage. In Mr. Riker's specimen the outer web of the primary coverts is margined with grayish white, and this color appears in faint terminal spots on the greater and lesser wing-coverts.—F. M. C.]

129. *Hypocnemis hypoleuca* (Ridgw.).

Heterocnemis hypoleuca sp. nov.? RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 523.

A female taken July 11, 1887, in company with the preceding.

[Mr. Sclater, to whom I have forwarded a second and typical female of this species taken by Williams, June 26, 1883, writes me that it is not the female of *Heterocnemis argentata* (Des Murs), which by Mr. Ridgway was considered possible (*l. c.*), but belongs to a species closely allied to *Hypocnemis lugubris*.—F. M. C.]

130. [*Rhototerpe torquata* (Bodd.).—"Deep woods near Santarem, May 19; common."*]

131. *Phlogopsis bowmani* Riker.

Phlogopsis bowmani RIKER MS., RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 524.

Two adult males taken July 15, 1887, in a dense forest on the 'mountain,' feeding upon the insects preceding the army ants.

132. *Rhegmatorhina gymnops* Ridgw.

Rhegmatorhina gymnops RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 525.

Gymnophithys gymnops SCL., Cat. Bds. B. M., XV, 1890, p. 297.

*Allen, Bull. Essex Inst., Vol. VIII, No. 8, 1876, p. 80.

A pair taken July 15, 1887, were found associated with *Phlogopsis bowmani*.

[The elongated and stiffened feathers of the crown and more rounded tail of this species appear to me to be sufficiently good characters on which to separate it generically from *Gymnophithys*.—F. M. C.]

133. *Eupetomena macroura* (Gm.).—A male and female taken on the campos, July 14, 1884.

134. *Thalurania glaucopsis* (Gm.).—Three females taken in June and July, 1887.

135. *Thalurania furcatoides* Gould.—A male taken August 2, 1884.

136. *Eucephala cærulea* (Vieill.).—Common during June and July of 1884 and 1887.

[137. *Antrostomus* sp. incog. —A female collected by Smith, January 23, 1889, measures: wing 5.00; tail, 3.70 in. The crown is almost entirely black, the spots on the quills, the tail-bars, and the abdomen are buffy.—F. M. C.]

138. *Nyctidromus albigollis* (Gm.).—Common.

[139. *Picumnus cirratus* Temm.—A female in faded and worn plumage collected by Williams, September 3, 1883, is provisionally referred to this species. The abraded condition of the plumage renders its characters too obscure to permit positive identification.—F. M. C.]

[140. *Ceophlæus tracheolopyrrhus* (Malh.).—An adult male taken by Smith, January 24, 1889.—F. M. C.]

141. *Ceophlæus lineatus* (Linn.).—Common.

142. *Ceophlæus melanoleucus* (Gm.).—Two females taken during June and July, 1887.

143. *Chloronerpes affinis selysi* (Malh.). — Two males and a female taken during June and July.

[They differ from Bahia specimens (*affinis*) only in the restriction of the yellow nuchal band.—F. M. C.]

[144. *Chloronerpes flavigularis* (Bodd.).—A female collected by Smith March 15, 1889, agrees with Malherbe's plate of *Chloropicus chlorocephalus*, but is quite different from Guianan specimens of *flavigularis* in the Lawrence Collection, which have the white markings of the throat guttate, or scutiform, while in the Santarem specimen they are broadly triangular.—F. M. C.]

145. *Chrysophilus guttatus* (Spix).

Picus guttatus SPIX, Av. Bras., I, 1824, p. 61, pl. viii.

An adult female and an immature male, taken respectively July 13 and June 23, 1887, in the flooded districts on the banks of the river.

[These specimens differ from a Venezuelan example, identified as *C. punctigula* by Mr. Sclater, in being slightly smaller, paler, and less heavily spotted below, and especially in the pattern of coloration of the black and white markings of the throat. In the Venezuelan bird the feathers of this region are white with a central black streak which is broadest basally and after a slight sub-terminal constriction widens at the tip. In the Santa

rem birds these feathers are black with two white apical spots. From the southern form of *C. punctigula*, *C. p. punctipectus* (Cab. & Hein.*) it may be distinguished by its *darker* coloration and by the same characters in the pattern of the throat feathers which separate it from *C. punctigula*. *Chrysophilus speciosus* Scl. (= *C. punctipectus* Tacz., Orn. Peru, III, p. 88, *nec* Cab. & Heine.) I have not seen; it is evidently closely related to, but larger than, the Lower Amazonian form. The *Picus guttatus* of Spix, described from the Amazon, has by authors been synonymized with the earlier *Picus punctigula* (Bodd.). While Spix's description is not sufficiently detailed to render certain the form he had in hand, the locality he gives, "*in sylvis fl. Amazonum*," makes it extremely probable his specimens were similar to the Santarem bird.

Measurements (in inches) of four forms are appended.

		Wing	Tail	Exposed Culmen
<i>C. punctigula</i> , Venezuela,	♀ ad.	4.42	2.78	.86
<i>C. p. punctipectus</i> , Rio,	♀ ad.	4.48	3.08	.62
<i>C. guttatus</i> , Santarem,	♀ ad.	4.28	2.70	.91
" " "	♂ im.	3.97	2.50	.75
<i>C. speciosus</i> , Upper Amazon,	♂ ad.	4.71	3.26	1.02†

146. *Melanerpes cruentatus* (Bodd.). — Common about plantations in the lowlands, puncturing holes in oranges.

147. *Celeus ochraceus* (Spix). — A female taken June, 1887, near the river.

148. *Celeus citrinus* (Bodd.). — A male taken June 16, and a female, July 5, 1887. Feet and feathers covered with a sticky substance in which were matted quantities of ants. The only reason for this I can advance is that they enter the nests of wild bees in quest of young bees or honey.

[The male is quite different from Guianan specimens and has only the inner half of the inner web of the secondaries brown; the female, however, has the whole inner web and inner half of the outer web brown, while the outer and median secondaries are wholly brown. If separable as a form from the Guianan bird the synonymy might stand as follows: *Picus flavicans* SPIX, Av. Bras., I, p. 60, pl. li, fig. 2, *nec* *Picus flavicans* LATH., Ind. Orn., I, p. 240 = *Picus citrinus* BODD., Tabl. Enl. p. 30, No. 509.

(To be concluded.)

* Mus. Hein., IV, 1863, p. 163.

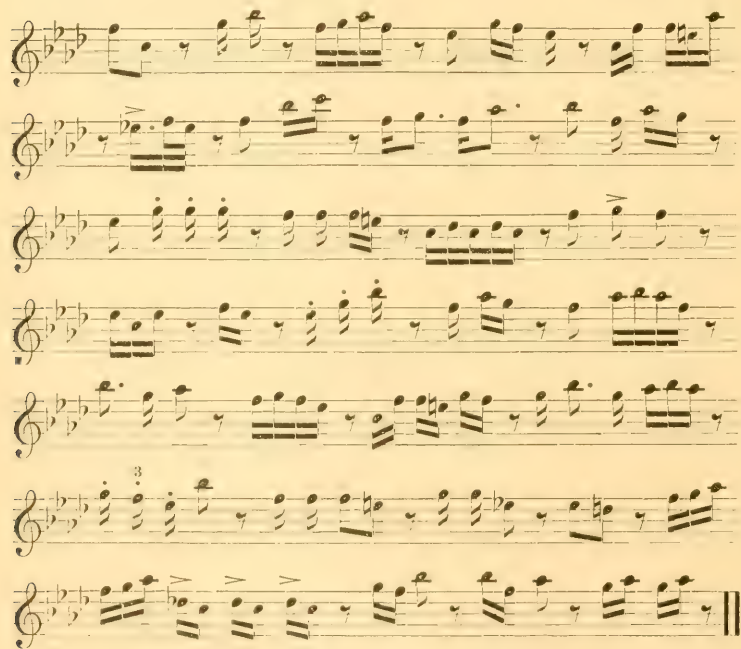
† Tacz., Orn. Peru, III, p. 88.

SOME BIRD SONGS.

BY SIMEON PEASE CHENEY.

CATBIRD.

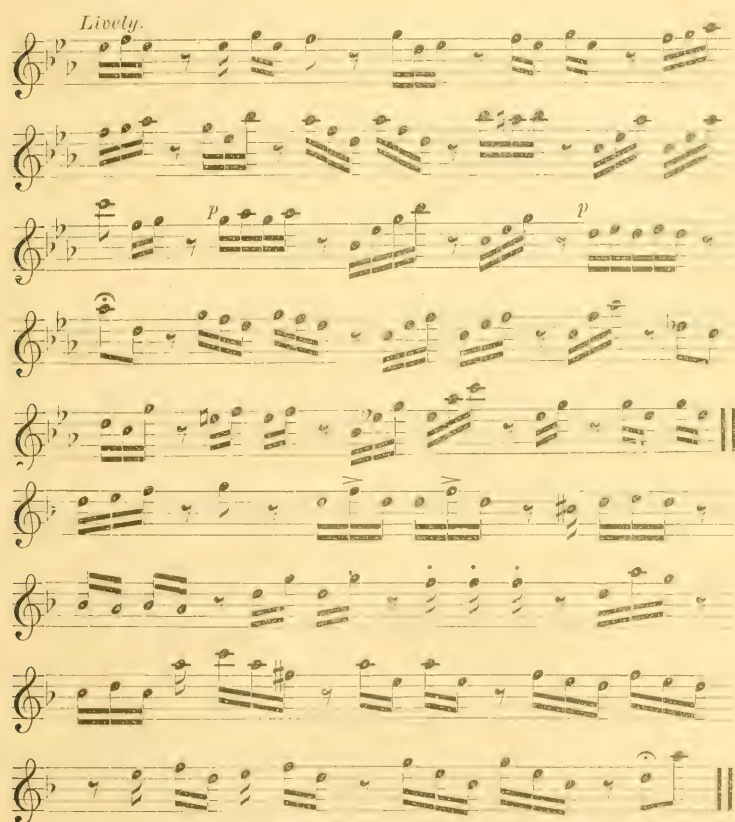
With something of the style of the Brown Thrush, the Catbird is not his equal in song. He is generally considered a mocking-bird, and does make use of the notes of different birds, delivering them in snatchy, disconnected fashion. It is easy to trace in the Catbird's singing the notes of the Red-eyed Vireo, the Brown Thrasher, Bluebird, Robin, and Yellow-breasted Chat. His performance on the whole is very interesting, given, as it is, in a lively manner, with an occasional tone truly sweet and musical. Much of his singing, however, is mere twitter, often little more than a succession of squeaks, too antic to be put on paper.



BROWN THRUSH; BROWN THRASHER.

Despite a lack of quality in tone, the Thrasher is one of the favorites; his fame is assured. In exuberance and peculiarity

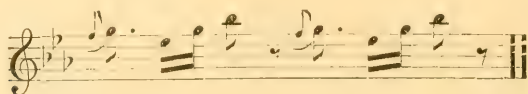
of performance he is unsurpassed, unless it be by the Catbird. While prone to the conversational style, he is capable of splendid inspiration. On a fine morning in June, when he rises to the branch of a wayside tree, or to the top of a bush at the edge of the pasture, the first eccentric accent compels us to admit that the spirit of song has fast hold on him. As the fervor increases, his long and elegant tail droops, his whole plumage is loosened and trembling, his head is raised, and his bill is wide open; there is no mistake, it is the power of the god. No pen can report him now; we must wait till the frenzy passes. Then we may catch such fragments as these:



WHIPPOORWILL.

No bird in New England is more readily known by his song

than is the Whippoorwill. In the courageous repetition of his name he accents the first and last syllables, the last most; always measuring his song with the same rhythm, while very considerably varying the melody—which latter fact is discovered only by most careful attention. Plain, simple and stereotyped as his song appears, marked variations are introduced in the course of it. The whippoorwill uses nearly all the intervals in the natural scale, even the octave. I have never detected a chromatic tone. Perhaps the favorite song-form is this:

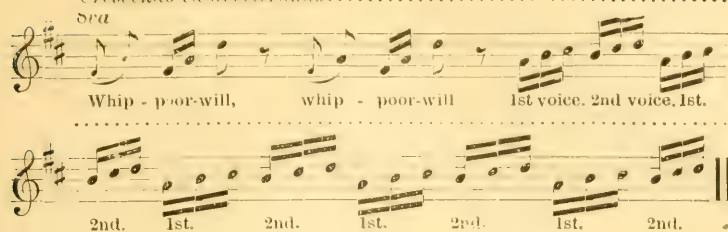


An eccentric part of the Whippoorwill's musical performance is the introduction of a '*cluck*' immediately after each '*whip-poor-will*'; so that the song is a regular, unbroken, rhythmical chain from beginning to end. One must be near the singer to hear the '*cluck*'; otherwise he will mark a rest in its place.

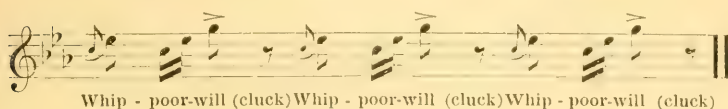
This bird does not stand erect with head up like the Robin when he sings, but stoops slightly, puts out the wings a little and keeps them in a rapid tremor throughout the entire song. Wilson decided that it required a second of time for the delivery of each '*whip-poor-will*.' "When two or more males meet," he adds, "their *whip-poor-will* altercations become much more rapid and incessant, as if each were straining to overpower or silence the other." These altercations are sometimes very amusing. Three Whippoorwills, two males and a female, indulged in them for several evenings one season, in my garden. They came just at dark, and very soon a spirited contest began. Frequently they flew directly upward, one at a time. Occasionally one flew down into the path near me, put out his wings, opened his big mouth, and hissed like a goose disturbed in the dark. But, the most peculiar, the astonishing feature of the contention was the *finale*. Toward the close of the trial of speed and power, the unwieldy name was dropped, and they rattled on freely with the same rhythm that the name would have required, alternating in their rushing triplets, going faster and faster, louder and louder, to the end.

Crescendo ed accelerando.....

5va



Various melodic forms :



8va



8va

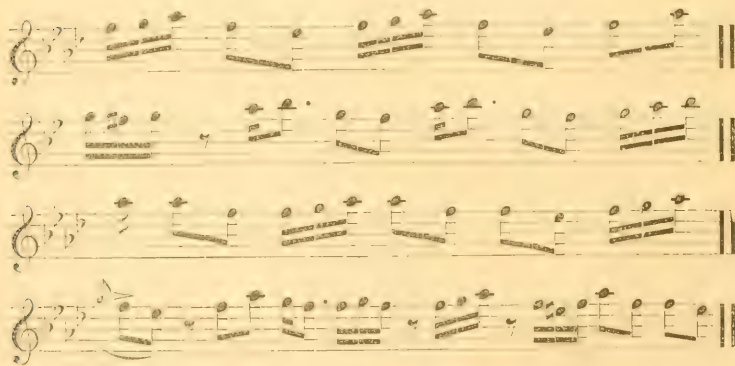


SCARLET TANAGER.

This Tanager, the Baltimore Oriole's rival in beauty, is the less active, the less vigorous charmer of the two, and has less vocal power; but it would be difficult to imagine a more pleasing and delicate exhibition of a bird to both eye and ear than that presented by this singer in scarlet and black, as he stands on the limb of some tall tree in the early sun, shining, and singing, high above the earth, his brief, plaintive, morning song. The Tanager's is an unobtrusive song, while the percussive, ringing tones of the Oriole compel attention. In the spring of 1888 a beautiful singer greeted me one summer morning from the top of a tall oak near the house. He paid frequent visits to the same tree-top during the entire season, and sang the same song, beginning and ending with the same tones:



Still, like other birds, he had his variations:



These were all June songs, the last two being sung late in the afternoon.

Though the singer's home was in the near woods, we did not discover the nest of his mate. There came a time of silence, and an absence of flaming plumage, and finally a family of Tanagers—undoubtedly ours—male and female and three unfinished young

Tanagers of a neutral, olive tint, were about our grounds in the last days of August, evidently preparing to leave for their home in the tropics. The husband and father had doffed both his 'singing-robe' and his garment of scarlet, and wore in silence a traveling-dress of mixed pea-green and willow-yellow. More desirous than ever to avoid notice, there was about him a most captivating air of quietness and modesty.

ON THE WEST INDIAN SPECIES OF THE GENUS *CERTHIOLA* OR *CÆREBA*.*

BY CHARLES B. CORY.

GENUS *Cæreba* VIEILLOT.

Cæreba VIEILLOT, Ois. Am. Sept. I, 1807, p. 70. Type, *C. flaveola* Linn.

A. Throat ash color or ashy white; large, white wing-spot on quills extending beyond primary coverts.

Cæreba bahamensis (Reich.).

Certhia bahamensis BRISS. Orn. III, p. 620 (1760).

Certhiola bahamensis REICH. Handb. I, p. 253 (1853).—CORY, Birds Bahama Islands, p. 76 (1880); *id.* Birds West Indies, p. 61 (1889).

Certhiola bairdii CAB. J. f. O. 1865, p. 412.

Cæreba bahamensis RIDGW. Man. N. A. Birds, p. 590 (1887).

Throat ashy white; ash white on abdomen.

HABITAT.—Bahama Islands (61).†

Cæreba sharpei (Cory).

Certhiola sharpei CORY, Auk, III, pp. 497, 501 (1886).—RIDGW. Proc. U. S. Nat. Mus. p. 574 (1887).

Throat more ashy than in *bahamensis*; belly pale yellow or yellowish white.

HABITAT.—Grand Cayman (36), Little Cayman (19), and Cayman Brac (13).

*According to Mr. Ridgway (Manual of N. Am. Birds, p. 590 (1887), *Cæreba* must be used for this genus.

†The numbers of specimens examined are given after the names of the islands on which the species occur.

B. Throat ash gray; white spot showing beyond primary coverts.

Cæreba portoricensis (Bryant).

Certhiola flaveola var. *portoricensis* BRYANT, Pr. Boston Soc. Nat. Hist. X, p. 252 (1886).

Certhiola portoricensis SUND, Consp. 1869, p. 622.—SCLATER, Cat. Bds. Brit. Mus. XI, p. 41 (1886).—CORY, Bds. West Indies, p. 62 (1889).

Certhiola sancti-thomæ RIDGW. Proc. U. S. Nat. Mus. VIII, pp. 28-29 (1885).

Under parts and rump yellowish olive. Some specimens from Anegada have the throat slightly darker than those from St. Thomas or Porto Rico.

HABITAT.—Porto Rico (16), Culebra (1), Anegada (26), Tortola (6), Virgin Gorda (28), St. Thomas (10), St. John (4).

Cæreba luteola (Cab.).

Certhiola luteola CAB. Mus. Hein. I, p. 96.—SCLATER, Cat. Am. Bds. p. 53 (1862).—TAYLOR, Ibis, 1864, p. 179.—SCLATER, Cat. Bds. Brit. Mus. XI, p. 40 (1886).

Certhiola flaveola LÉOTAUD, Ois. Trinidad, p. 126.

Certhiola godmani CORY, Auk, VI, p. 219 (1889).

Under parts and rump bright orange yellow; throat slightly darker than in *portoricensis*; back dark.

HABITAT.—Grenada (9), Trinidad (2), Tobago (1), Venezuela (6), and north coast of Colombia.

C. Throat dark slaty gray; white spot at base of primaries.

c¹. Rump bright yellow.

Cæreba bananivora (Gmel.).

Motacilla bananivora GMEL. Syst. Nat. I, p. 951 (1788).

Certhiola bananivora BRYANT, Proc. Boston Soc. Nat. Hist. XI, p. 95 (1865).—CORY, Bds. Hayti and San Domingo, p. 41 (1885); *id.* Bds. West Indies, p. 63 (1889).—SCLATER, Cat. Bds. Brit. Mus. XI, p. 40 (1886).

Certhiola chisiæ HARTL. Naumannia, II, pt. 2, p. 56 (1852).—SCL. & SALV. Nomen. Avium Neotr. p. 17 (1873).

HABITAT.—Hayti and San Domingo (65).

Cæreba flaveola (Linn.).

Certhia flaveola LINN. Syst. Nat. I, p. 187 (1766).

Certhiola flaveola GOSSE, Bds. Jamaica, p. 84 (1847).—CORY, Bds. West Indies, p. 65 (1889).—SCLATER, Cat. Bds. Brit. Mus. XI, p. 43 (1876).

Throat darker than in *bananivora*.

HABITAT.—Jamaica (13).

c². *Rump yellowish olive.*

Cœreba newtoni (Baird).

Certhiola flaveola A. and E. Newton, Ibis, 1859, p. 67.

Certhiola newtoni BAIRD, American Nat. VII, p. 611 (1873).—RIDGW.

Proc. U. S. Nat. Mus. VIII, pp. 28-30 (1885).—SCLATER, Cat. Bds.

Brit. Mus. XI, p. 43 (1876).—CORY, Bds. West Indies, p. 65 (1889).

Superciliary stripe very heavy and extending to the bill; white marking in quills truncate.

HABITAT.—St. Croix (33).

Cœreba saccharina (Lawr.).

Certhiola saccharina LAWR. Ann. N. Y. Acad. Sci. I, p. 151 (1878).—

RIDGW. Proc. U. S. Nat. Mus. VIII, pp. 28-30 (1885).—SCLATER,

Cat. Bds. Brit. Mus. XI, p. 42 (1886).—CORY, Bds. West Indies, p.

64 (1889).

Throat darker than in *C. newtoni*.

HABITAT.—St. Vincent (7).

D. Throat dark slaty gray; comparatively little or no white showing on quills; rump dull yellowish olive.

Cœreba dominicana (Taylor).

Certhiola dominicana TAYLOR, Ibis, 1864, p. 167.—SCLATER, Cat. Bds.

Brit. Mus. XI, p. 44 (1886).—CORY, Bds. West Indies, p. 65 (1889).

Certhiola sundevalli RIDGW. Proc. U. S. Nat. Mus. 1885, p. 26.

HABITAT.—Dominica (14), Marie Galante (13), Desirade (4), Barbuda (3), Nevis (2), St. Kitts (15), St. Eustatius (14), Saba (3).

Cœreba bartolemica (Sparrm.).

Certhia bartolemica SPARRM. Mus. Carls. fasc. III, No. 57 (1788).

Certhiola bartolemica REICH. Hand. Scans. p. 253 (1853).—RIDGW. Proc.

U. S. Nat. Mus. VIII, p. 28 (1885).—SCLATER, Cat. Bds. Brit. Mus.

XI, p. 42 (1886).—CORY, Bds. West Indies, p. 64 (1889).

Allied to *dominicana*, but showing some white on the quills. The superciliary stripe in the specimens examined from St. Bartholemew begins above the eye; but one of the Anguilla specimens, which I have referred to this species, has the superciliary stripe nearly reaching the bill. It is now known that the extent of the grayish white feathers on the forehead and the length and color of the superciliary stripe vary much in several species with age and season, and are of comparatively little value as distinguishing characters. Unfortunately lack of sufficient material from St. Bartholemew renders it unwise to attempt to decide as to the specific value of *dominicana*; but in case the two forms should prove to be inseparable, *bartolemica*, being the older name, would of course stand, and *dominicana* become a synonym.

HABITAT.—St. Bartholemew (3), Anguilla (2)?

E. Throat bicolored.

Cœreba martinicana Reich.).

Certhia martinicana s. saccharivora BRISS. Orn. III, p. 611 (1760).

Certhiola martinicana REICH. Handb. I, p. 252 (1853).—RIDGW. Proc.

U. S. Nat. Mus. VIII, pp. 28-30 (1885).—SCLATER, Cat. Bds. Brit.

Mus. XI, p. 46 (1886).—CORY, Bds. West Indies, p. 66 (1889).

Certhiola albigula BR. Compt. Rend. 1854, p. 259.—TAYLOR, Ibis, 1864, p. 167.

Certhiola finschi RIDGW. Proc. U. S. Nat. Mus. VIII, p. 25 (1885).

Throat black with median white stripe nearly reaching the bill; immature birds have the superciliary stripe yellow, a phase of plumage which occurs in several other species.

HABITAT.—Martinique (30), St. Lucia (6).

Cœreba barbadensis (Baird).

Certhiola barbadensis BAIRD, Am. Nat. VII, p. 612 (1873).—RIDGW.

Proc. U. S. Nat. Mus. VIII, pp. 28-30 (1885).—SCLATER, Cat. Bds.

Brit. Mus. XI, p. 46 (1886).—CORY, Bds. West Indies, p. 66 (1889).

Throat black with a patch of white on the lower half joining the yellow of the breast.

HABITAT.—Barbados (29).

F. Plumage entirely black, often showing a faint greenish gloss.

Cœreba wellsi (Cory).

Certhiola wellsi CORY, Auk, VI, p. 219 (1889).

HABITAT.—Grenada (9).

Cœreba atrata (Lawr.).

Certhiola atrata LAWR. Ann. N. Y. Acad. Sciences, I, p. 150 (1878).—

RIDGW. Proc. U. S. Nat. Mus. VIII, pp. 28-30 (1885).—SCLATER,

Cat. Bds. Brit. Mus. XI, p. 47 (1886).—CORY, Bds. West Indies, p.

67 (1889).

HABITAT.—St. Vincent (7).

The species of the genus not included in the foregoing list are as follows:—

C. tricolor (Ridgw.).—Old Providence (11), St. Andrews (14).

C. tricolor RIDGW. Proc. U. S. Nat. Mus. 1884, p. 178.

Throat slightly more ashy than *sharppei*, and breast, rump, and under parts more orange yellow.

C. caboti (*Baird*).—Cozumel Is. (4).

Certhiola caboti BAIRD, Am. Nat. VII. p. 612 (1873).

Throat dull white, lighter than in *bahamensis*; belly yellow; olive on the flanks and vent.

C. mexicana (*Sclater*).—Mexico (3), Guatemala (5), Panama (2).

Certhiola mexicana SCLATER, P. Z. S. 1856, p. 286.

Throat ash gray; white spot at base of primaries variable in size; rump yellowish olive.

C. mexicana columbiana (*Cab.*).—Panama (2) to Peru.

Certhiola columbiana CAB. J. f. O. 1865, p. 412.

Rump brighter yellow than in *mexicana*. A race of doubtful value.

C. mexicana peruviana (*Cab.*).—Peru (5), Bolivia (1).

Certhiola peruviana CAB. J. f. O. 1865, p. 413.

Wing spot very small. Intermediate between *mexicana* and *chloropyga*.

C. mexicana magnirostris (*Tacz.*).—Peru (2).

Certhiola magnirostris TACZ. P. Z. S. 1876, p. 225.

Bill large; apparently no other distinguishing characters.

C. chloropyga (*Cab.*).—Brazil (5), north to Guiana, Cayenne (2).

Certhiola chloropyga CAB. Mus. Hein. I, p. 97 (1851).

Certhiola guianensis CAB. Mus. Hein. I, p. 97 (1851).

Certhiola majuscula CAB. J. f. O. 1865, p. 413.

Throat ashy gray; lower rump olive yellow; back slaty brown; wing spot concealed.

Of the 615 specimens examined while preparing the present paper 583 are contained in my own collection. The balance were loaned me for examination by the American Museum of Natural History, New York, through the kindness of Dr. J. A. Allen, and the Smithsonian Institution, Washington, by Mr. Robert Ridgway, to both of whom I wish to express my thanks.

NOTES ON WEST INDIAN BIRDS.

BY CHARLES B. CORY.

THE COLLECTIONS lately forwarded to me from the West Indies contain a large series of so-called *Margarops montanus*, which, taken together with those already in my cabinet, form a series of 121 specimens from the various islands where it occurs. A care-

ful examination and comparison of the material now before me shows that the variation in color of specimens from different islands is not at all constant, and I am forced to the conclusion that the supposed races *albiveniris* and *rufus* as described by Mr. Lawrence and myself, are untenable.

It is evident that the species in question should be separated generically from *Cichlherminia*, as *Margarops* cannot be used, the type being given as *fuscatus*. I therefore propose the name of *Allenia*, in compliment to Dr. J. A. Allen of New York, for the new genus.

***Allenia montana* (LAFR.).**

Turdus montanus LAFR. Rev. Zool. 1844, p. 107.

Margarops montanus SCLATER, P. Z. S. 1859, p. 336; *ibid.* 1871, p. 268.—

GRAY, Handl. Bds. I, p. 259 (1869).—CORY, Birds of the West Indies, p. 29 (1889).

Cichlherminia montana SHARPE, Cat. Birds Brit. Mus. VI, p. 330, (1881).

Margarops albiventris LAWRENCE, Ann. New York Acad. Sci., IV, p. 23 (1887).

Margarops montanus rufus CORY, Auk, V, p. 47 (1888).

HABITAT.—Grenada, St. Vincent, Martinique, St. Lucia, Dominica, Guadeloupe, Marie Galante, Desirade, St. Kitts, Antigua, St. Eustatius.

I have been fortunate in being able to procure a very large series of *Cichlherminia fuscata* and *C. densirostris* from the Antilles, numbering in all over two hundred specimens, and a careful examination of this material gives the following results.

1. That there is a gradual change in color from a light brown form in the extreme north (Inagua, Bahamas) to a dark brown form with slightly different markings in the extreme south (St. Lucia).

2. That the change in color is so gradual that specimens from approximate islands cannot be separated.

3. That there is no positive line of demarcation, and that the two forms should be separated subspecifically if at all.

It is claimed that birds from the Lesser Antilles have the iris yellow, while in those from Porto Rico, Inagua and some of the northern islands it is white. According to the notes given by my collectors this does not seem to be a constant character, as the

color of the eye in specimens from Martinique and Dominica is given as yellowish white, whitish yellow, and pale yellow, while some birds from Inagua and Porto Rico are noted as having the eye dull white and "iris yellowish white."

By restricting *C. fuscata* to the Bahamas, Porto Rico, San Domingo, St. Croix, and the Virgin Islands, we should arrange the genus as follows:

***Cichlherminia fuscata* (VIEILL.).**

Turdus fuscatus VIEILL. Ois. Am. Sept. II, p. 1 (1807).—BP. Consp. I, p. 276 (1850).

Colluricincla fusca GOULD, P. Z. S. 1836, p. 6.

Margarops fuscatus SCLATER, P. Z. S. 1859, p. 335.—CORY, Bds. Bahama Islands, p. 47 (1880); *id.* Bds. Hayti and San Domingo, p. 22 (1885); *id.* Birds of the West Indies, p. 28 (1889).

Cichlherminia fuscata, A. and E. NEWTON, *Ibis*, 1859, p. 141.—SHARPE, Cat. Bds. Brit. Mus. VI, p. 329 (1881).

HABITAT.—Inagua, Bahamas, San Domingo, Porto Rico, St. Croix, and the Virgin Islands (Virgin Gorda, St. Thomas, and Tortola).

***Cichlherminia fuscata densirostris* (VIEILL.).**

Turdus densirostris VIEILL. Nouv. Dict. XX, p. 233 (1816).—LAFR. Rev. Zool. 1844, p. 167.

Cichlherminia densirostris BP. Compt. Rend. XXXVIII, p. 2 (1854).—SHARPE, Cat. Bds. Brit. Mus. VI, p. 330 (1881).

Margarops densirostris SCLATER, P. Z. S. 1859, p. 336.—ALLEN, Bull. Nutt. Orn. Club, V, p. 166 (1880).—CORY, Birds West Indies, p. 29 (1889).

HABITAT.—St. Eustatius, St. Kitts, Anguilla, Antigua, Montserrat, Dominica, Martinique, Guadeloupe, St. Lucia, and Barbados.

***Cichlherminia herminieri* (LAFR.).**

Turdus herminieri LAFR. Rev. Zool. 1844, p. 167.

Cichlherminia herminieri BP. Comp. Rend. XXXVIII, p. 2 (1854).—SHARPE, Cat. Bds. Brit. Mus. VI, p. 327 (1881).—CORY, Birds West Indies, p. 21 (1889).

Cichlherminia bonapartii SCL. P. Z. S. 1859, p. 335.

Margarops herminieri SCL. & SALV. Nomen. Avium Neotropical. p. 2 (1873).—LAWR. Pr. U. S. Nat. Mus. I, p. 52 (1878)—SCLATER, P. Z. S. 1880, p. 72.

HABITAT —Guadeloupe.

Cichlherminia lawrencii sp. nov.

SP. CHAR. (Type No. 15056, ♂, Coll. C. B. Cory, Boston). Upper parts, wings, and tail dark rufous brown; throat reddish brown, the middle of the feathers marked unevenly with brownish white, edged with reddish brown. The feathers of the under parts are white, edged with brown, showing large, white, arrow-shaped markings on the lower breast and belly; feathers of the under wing-coverts white, edged with brown: under surface of inner primaries showing pale rufous brown on the inner webs. Length 9.50; wing 5.50; tail 3.75; tarsus 1.50; bill .95 inch.

The Montserrat bird is intermediate in color between *dominicensis* and *herminieri*. The feathers on the throat are edged with rufous brown, not pale brown as in *herminieri*. The back is reddish brown, not pale olive as in *herminieri*, or dark brown as in *dominicensis*. The white, arrow-shaped markings on the underparts are larger and more regular.

HABITAT.—Montserrat, West Indies.

Cichlherminia sanctæ-luciæ (SCLATER).

Margarops herminieri SCL. P. Z. S. 1881, p. 268.

Margarops sanctæ-Luciæ SCL. Ibis, 1880, p. 73.—ALLEN, Bull. Nutt. Orn. Club, V, p. 165 (1880).

Margarops herminieri var. *semperi* LAWR. MS. Bull. Nutt. Orn. Club, V, p. 165 (1880).

Cichlherminia sanctæ-luciæ SHARPE, Cat. Bds. Brit. Mus. VI, p. 238 (1881).—CORY, Birds West Indies, p. 22 (1889).

HABITAT.—St. Lucia. St. Vincent?

Cichlherminia dominicensis (LAWR.).

Margarops herminieri LAWR. Proc. U. S. Nat. Mus. I, p. 52 (1878).

Margarops dominicensis LAWR. Proc. U. S. Nat. Mus. III, p. 16 (1880).

Cichlherminia dominicensis SHARPE, Cat. Bds. Brit. Mus. VI, p. 328 (1881).—CORY, Bds. West Indies, p. 22 (1889).

HABITAT.—Dominica. Martinique?

In a large series of *Mimus orpheus* now before me from the Bahamas and Greater Antilles the specimens from the different islands fail to show any differences sufficiently constant to warrant separating them specifically. Some birds vary decidedly in size and coloration, but as much variation is noticeable in specimens from the same locality as in those from different islands.

The tail marking varies in different specimens, and some examples show the two external tail-feathers differently marked in the same bird. At first glance the Inagua bird would appear to represent a fairly good race, as the average specimens are slightly smaller, and a majority of them have the white patch on the primaries completely covered, when the wing is closed, by the white primary coverts (the primary coverts are sometimes white and sometimes tipped and blotched with brown, according to age and season), but taken in large series it is found that at least one fourth of the specimens show the white on the closed wing extending beyond the primary coverts, and we find birds from Porto Rico, San Domingo, the Caymans, and Cuba, which vary in the same manner having the white on the quills both covered and exposed.

The difference between *M. orpheus* and *M. polyglottos* are not always well marked. In many cases they are very close indeed, in fact I do not know a single character which is absolutely constant whereby they may be distinguished. Some Florida and Texas birds are darker and somewhat larger than any West Indian specimens I have seen, but birds occur on Andros Island, Abaco, and others of the northern Bahama Islands which it is difficult to refer to one or the other. We have therefore no alternative but to consider *orpheus* as a subspecies of *polyglottos*.

Mimus polyglottos orpheus (LINN.).

Turdus orpheus LINN. Syst. Nat. I, p. 169 (1758); *ib.* p. 293 (1766).

Mimus polyglottus GOSSE, Bds. Jamaica, p. 144 (1847).

Mimus orpheus GRAY, Gen. Bds. I, p. 221 (1844). — CORY, Bds. West Indies, p. 33 (1889).

Mimus polyglottus var. *cubanensis* BRYANT, Proc. Boston Soc. Nat. Hist. p. 68 (1866).

Mimus elegans SHARPE, Cat. Eds. Brit. Mus. VI, p. 339 (1881).

Turdus dominicus LINN. Syst. Nat. I, p. 295 (1766).

Mimus dominicus CORY, Bds. Hayti and San Domingo, p. 21 (1885); *id.* Bds. West Indies, p. 34 (1889).

Mimus orpheus var. *dominicus* CORY, Bds. Bahama Islands, p. 48 (1880).

HABITAT. — Jamaica, Cuba, Grand Cayman, San Domingo, Andros, Abaco, and Inagua, Bahamas.

The Porto Rico bird is perhaps worthy of subspecific separation, as a majority of the specimens are larger and darker than

those from neighboring islands. The wings and tail are very dark, almost black, but my cabinet also contains specimens from Porto Rico which are difficult to distinguish from birds taken in Cuba and San Domingo.

Mimus polyglottos portoricensis BRYANT.

Mimus polyglottus var. *portoricensis* BRYANT. Proc. Boston Soc. Nat. Hist. XI, p. 68 (1866).

Mimus polyglottus GUNDLACH, Anales de la Soc. Esp. de Hist. Nat. VII, p. 173 (1878).

HABITAT.—Porto Rico.

A COLLECTION OF BIRDS TAKEN BY CYRUS S.
WINCH IN THE ISLANDS OF ANGUILLA, AN-
TIGUA, AND ST. EUSTATIUS, WEST INDIES,
DURING APRIL, MAY, JUNE, AND A
PART OF JULY, 1890.

BY CHARLES B. CORY.

ANGUILLA.

Podilymbus podiceps (<i>Linn.</i>).	Elænea martinicana (<i>Linn.</i>).
Gallinula galeata (<i>Licht.</i>).	Euetheia bicolor (<i>Linn.</i>).
Fulica caribæa (<i>Ridgw.</i>).	Loxigilla noctis (<i>Linn.</i>).
Himantopus mexicanus <i>Müll.</i>	Cœreba bartholemica? (<i>Sparrm.</i>).
Falco caribbæarum <i>Gmel.</i>	Cichlherminia fuscata densirostris (<i>Vieill.</i>).
Ceryle alcyon (<i>Linn.</i>).	Galeoscoptes carolinensis (<i>Linn.</i>).
Tyrannus dominicensis (<i>Gmel.</i>).	

ANTIGUA.

Larus atricilla (<i>Linn.</i>).	Pelecanus fuscus <i>Linn.</i>
Sterna sandvicensis aculeiflida <i>Cabot.</i>	Gallinula galeata (<i>Licht.</i>).
Sterna dougalli <i>Mont.*</i>	Fulica caribæa <i>Ridgw.</i>
Sterna antillarum (<i>Less.</i>).	Himantopus <i>Müll.</i>

* Specimens of this species taken in June have the basal half of the bill red, and in three specimens the red color extends more than half the length of the bill. In all these birds the black cap is complete. In specimens taken in September, which have the black cap imperfect or mixed with white and gray, the bill is entirely black.

<i>Symphemia semipalmata</i> (Gmel.).	<i>Bellona exilis</i> (Gmel.)
<i>Totanus melanoleucus</i> (Gmel.).	<i>Eulampis holosericeus</i> (Linn.).
<i>Colinus virginianus</i> (Linn.).	<i>Tyrannus dominicensis</i> (Gmel.).
<i>Columba leucocephala</i> Linn.	<i>Elænea martinica</i> (Linn.).
<i>Zenaida zenaida</i> (Bonap.).	<i>Euetheia bicolor</i> (Linn.).
<i>Geotrygon mystacea</i> (Temm.).	<i>Loxigilla noctis</i> (Linn.).
<i>Columbigallina passerina</i> (Linn.).	<i>Piranga erythromelas</i> Vieill.
<i>Buteo latissimus</i> (Wils.).*	<i>Vireo calidris</i> (Linn.).
<i>Falco caribbæarum</i> (Gmel.).	<i>Cæreba dominicana</i> (Taylor).
<i>Speotyto amaura</i> Lawr.	<i>Dendroica ruficapilla</i> (Gmel.).
<i>Coccyzus minor</i> (Gmel.).	<i>Allenia montana</i> (Lafr.).
<i>Coccyzus americanus</i> (Linn.).	<i>Cichlherminia fuscata densirostris</i> (Vieill.).

ST. EUSTATIUS.

<i>Phaëthon flavirostris</i> Brandt.	<i>Vireo calidris</i> (Linn.).
<i>Ardea cærulea</i> Linn.	<i>Progne dominicensis</i> (Gmel.).
<i>Columba corensis</i> Gmel.	<i>Cæreba dominicana</i> (Taylor).
<i>Zenaida zenaida</i> (Bonap.).	<i>Mniotilta varia</i> (Linn.).
<i>Falco caribbæarum</i> Gmel.	<i>Dendroica ruficapilla</i> (Gmel.).
<i>Bellona exilis</i> (Gmel.).	<i>Compothlypis americana</i> (Linn.).
<i>Eulampis holosericeus</i> (Linn.).	<i>Dendroica discolor</i> (Vieill.).
<i>Tyrannus dominicensis</i> (Gmel.).	<i>Setophaga ruticilla</i> (Linn.).
<i>Euetheia bicolor</i> (Linn.).	<i>Allenia montana</i> (Lafr.).
<i>Loxigilla noctis</i> (Linn.).	<i>Cichlherminia fuscata densirostris</i> (Vieill.).

A LIST OF THE BIRDS COLLECTED IN THE
ISLANDS OF ST. CROIX AND ST. KITTS, WEST
INDIES, DURING MARCH AND APRIL, AND
IN GUADELOUPE DURING AUGUST,
SEPTEMBER, AND OCTOBER, 1890.

BY CHARLES B. CORY.

ST. CROIX.

<i>Gallinula galeata</i> (Licht.).	<i>Ctanus flavipes</i> (Gmel.).
<i>Ardea virescens</i> Linn.	<i>Columba leucocephala</i> Linn.
<i>Nycticorax violaceus</i> (Linn.).	<i>Columba corensis</i> Gmel.

* A rather small pale form, resident in Antigua, and quite abundant.

<i>Zenaida martinicana</i> Bonap.	<i>Cœreba newtoni</i> (Baird).
<i>Geotrygon mystacea</i> (Temm.).	<i>Seiurus noveboracensis</i> (Gmel.).
<i>Columbigallina passerina</i> (Linn.).	<i>Mniotilta varia</i> (Linn.).
<i>Falco caribbæarum</i> Gmel.	<i>Compsothlypis americana</i> (Linn.).
<i>Crotophaga ani</i> (Linn.).	<i>Dendroica discolor</i> (Vieill.).
<i>Bellona exilis</i> (Gmel.).	<i>Dendroica tigrina</i> (Gmel.).
<i>Eulampis holosericeus</i> (Linn.).	<i>Dendroica ruficapilla</i> (Gmel.).
<i>Tyrannus dominicensis</i> (Gmel.).	<i>Setophaga ruticilla</i> (Linn.).
<i>Euethia bicolor</i> (Linn.).	<i>Cichlherminia fuscata</i> (Vieill.).

ST. KITTS OR ST. CHRISTOPHER.

<i>Ardea virescens</i> Linn.	<i>Myiarchus berlepschii</i> Cory.
<i>Nycticorax violaceus</i> (Linn.).	<i>Euethia bicolor</i> (Linn.).
<i>Totanus flavipeus</i> (Gmel.).	<i>Loxigilla noctis</i> (Linn.).
<i>Columbigallina passerina</i> (Linn.).	<i>Vireo calidris</i> (Linn.).
<i>Buteo borealis</i> (Gmel.).	<i>Progne dominicensis</i> (Gmel.).
<i>Falco columbarius</i> Linn.	<i>Cœreba dominicana</i> (Taylor).
<i>Falco caribbæarum</i> Gmel.	<i>Compsothlypis americana</i> (Linn.).
<i>Ceryle alcyon</i> (Linn.).	<i>Dendroica discolor</i> (Vieill.).
<i>Bellona exilis</i> (Gmel.).	<i>Dendroica ruficapilla</i> (Gmel.).
<i>Eulampis holosericeus</i> (Linn.).	<i>Setophaga ruticilla</i> (Linn.).
<i>Eulampis jugularis</i> (Linn.).	<i>Allenia montana</i> (Lafr.).
<i>Elænea martinica</i> (Linn.).	<i>Cinclocerthia ruficauda</i> (Gould).

GUADELOUPE.

<i>Larus atricilla</i> Linn.	<i>Zenaida martinicana</i> Bonap.
<i>Sterna anæthetus</i> Scop.	<i>Geotrygon montana</i> (Linn.).
<i>Sterna antillarum</i> (Less.).	<i>Columbigallina passerina</i> (Linn.).
<i>Sterna dougalli</i> Mont. *	<i>Falco caribbæarum</i> Gmel.
<i>Anous stolidus</i> (Linn.).	<i>Ceryle alcyon</i> (Linn.).
<i>Ardea virescens</i> Linn.	<i>Coccyzus minor</i> (Gmel.).
<i>Ereunetes pusillus</i> (Linn.).	<i>Cypseloides niger</i> (Gmel.). †
<i>Tinga minutilla</i> Vieill.	<i>Chætura dominicana</i> Latr. ‡
<i>Tringa maculata</i> Vieill.	<i>Bellona exilis</i> (Gmel.).
<i>Actitis macularia</i> Linn.	<i>Eulampis holosericeus</i> (Linn.).
<i>Totanus solitarius</i> (Wils.).	<i>Eulampis jugularis</i> (Linn.).
<i>Ægialitis semipalmata</i> Bonap.	<i>Melanerpes l'herminieri</i> (Less.).

*A series of specimens taken September 20 to 24 are mostly immature, and all have the bill entirely black. Nearly all have the feet black, but two examples have the bill black and the feet dark red.

†Twenty-three examples of this species, which show considerable variation in size and some difference in color.

‡The collection contained a single specimen of this Swift, which I cannot distinguish from Dominica and St. Lucia specimens.

<i>Tyrannus dominicensis</i> (Gmel.).	<i>Dendroica plumbea</i> Lawr.
<i>Elanoides forficatus</i> (Linn.).	<i>Dendroica petechia melanoptera</i>
<i>Blacus brunneicapillus</i> Lawr.	Lawr.
<i>Quiscalus guadeloupensis</i> Lawr.	<i>Setophaga ruticilla</i> (Linn.).
<i>Euphonia bicolor</i> (Linn.).	<i>Thryothorus guadeloupensis</i> Cory.
<i>Loxia noctis</i> (Linn.).	<i>Allenia montana</i> (Lafr.).
<i>Saltator guadeloupensis</i> Lafr.	<i>Cichlherminia fuscata densirostris</i>
<i>Vireo calidris</i> (Linn.).	(Vieill.).
<i>Coccyzus dominicana</i> (Taylor).	<i>Cichlherminia herminieri</i> Lafr.
<i>Seiurus noveboracensis</i> (Gmel.).	<i>Cinlocerthia ruficauda</i> (Gould).

A FURTHER REVIEW OF THE AVIAN FAUNA OF CHESTER COUNTY, SOUTH CAROLINA.

BY LEVERETT M. LOOMIS.

THE PRESENT contribution to the ornithology of the Piedmont region of South Carolina resumes the subject as it was left by the 'Partial List' (Bull. Nutt. Orn. Club, Vol. IV, Oct., 1879, pp. 209-218) and the 'Supplementary Notes' (Auk, Vol. II, April, 1885, pp. 188-193).

The centre and chief scene of observation, furnishing the material for this and the earlier papers, has been the vicinity of the town of Chester, within a limit of five miles. Excursions have been made at different times, particularly during winter, to outlying parts of the County along the Broad and Catawba Rivers. These brief expeditions have revealed that a highly promising field lies immediately at hand awaiting exploration in common with the rest of the river portions of the Piedmont region. Besides affording the only really suitable situations for water birds in the County, these streams offer favorable avenues of approach for characteristic species of the Low-Country, which have not thus far been detected above the fall-line.

Even in the narrow area where the most effort has been expended there is still much to be learned. At the close of fourteen years, during which I have been able to devote much time to field study, I realize fully the verity of what Gilbert White long ago said, after more than forty years of observation at Selborne—

"new occurrences still arise as long as any inquiries are kept alive." Knowledge of this sort is gained slowly. The power to grasp expands with advancing experience, and facts accumulated in earlier years, the chief import of which was not perceived at the time of their gathering, are seen in the end to be conspicuous illustrations of great ornithological truths. In an extended series of years seasons, too, happen that are peculiarly propitious for investigation in certain directions, and circumstances then become palpable that have previously eluded satisfactory interpretation. Such, in an eminent degree, were December, 1889, and January, 1890.

The birds, species and subspecies, added since the publication of the last list, number twenty-three, raising the total, exclusive of the English Sparrow, to two hundred and two. These are believed to represent only about four fifths of the normal avifauna of the County, the river districts being expected to yield the bulk of the remaining fifth. Forty-two are 'resident'; sixty-seven are known as migrants; fifty, besides 'residents,' occur in the winter season; thirty-six have been found to be breeding summer visitors; seven are of doubtful rank, owing to insufficient observation. The general character of the fauna is Louisianian. The near proximity of the mountains exerts a modifying influence upon it, lessening the force of the Louisianian, however, rather than bringing into marked prominence the Carolinian.

*The Trans-Appalachian Movement.**—A peculiar complexion is given to the bird fauna of this region through the infusion of such characteristic Western species as *Ammodramus lecontei* and *Scolecophagus cyanocephalus*. If these birds could be dismissed with the simple statement that they were stragglers that had wandered from their usual habitat, their presence would be of little moment, but when it is understood that the former has occurred in considerable abundance and in successive seasons, the matter assumes a very different aspect, and one urgently requiring investigation. Besides the two birds mentioned, quite a number of others, commonly regarded as belonging to the western side of the Appalachian highlands, have been taken, as well as most of the rarer land species of the Atlantic slope

*This portion of the article was read, under a separate title, before the Eighth Congress of the American Ornithologists' Union.

whose centre of abundance lies in the interior. The first inquiry that arises is, how do these birds get here? In seeking an answer to this, an obstacle is encountered at the outset—the common obstacle that confronts every student who endeavors to arrive at conclusions based upon geographical distribution. While it is idle to look for absolute data for generalization, yet sufficient is known to remove the subject from the realm of mere conjecture.

The study of the list of trans-Appalachian birds occurring in Chester County reveals that they belong to four categories, as follows:—

1. Those, appearing in winter, which have not been reported on the Atlantic slope, so far as known, north of the South Atlantic States,—*Scolecophagus cyanocephalus*, *Calcarius pictus*, *Ammodramus leconteii*.

2. Those, also winter visitants, whose breeding range extends eastward from the Mississippi Valley and the region of the Great Lakes into the North Atlantic States,—*Otocoris alpestris praticola*, *Quiscalus quiscula aeneus*.

3. Those which have been found numerously in Chester County during migrations and also, though sparingly, at such times on the Atlantic slope as far north as Washington and New England,—*Dendroica palmarum*, *Seiurus noveboracensis notabilis*.

4. Those formerly considered as trans-Appalachian which are now known to breed on both sides of the mountain system, though ranging farther north on the western,—*Peucaea aestivalis bachmanii*, *Dendroica dominica albilora*.

There are two movements of 'Western' birds, distinct from each other, demanding exposition. Both are intimately connected with the general southward and northward migrations. The first is a movement from northern latitudes in fall and winter, the second from southern latitudes in spring. In the order mentioned the movement in a southerly direction is the first presenting itself for consideration. To understand fully the significance of this movement it is necessary to examine in detail the distribution of the birds of categories one and three. From the records it is found that the range of *Dendroica palmarum* stretches diagonally across the continent from the Great Slave Lake in the interior of British America to the Bahamas and Greater Antilles. In the central portion of the United States

Kansas appears to be its western limit. In the east it extends, numerous, to Ohio and the South Atlantic States. The trend of the comparatively limited breadth of territory outlined indicates that this species migrates from its breeding grounds, in the northwest, in a southeasterly direction. The range of *Ammodramus leconteii* and *Calcarius pictus* furnishes in a measure a parallel example. Both breed in the interior to the northwestward, the latter north to the Arctic coast, and both migrate southward and eastward in fall and winter to Illinois and South Carolina, but, in following the Great Plains to Texas, they bear further to the west than *Dendroica palmarum* does. The general tendency, however, of the movement as a whole is southeasterly. *Scolecophagus cyanocephalus* and *Seiurus noveboracensis notabilis* differ from the others in their occurrence along the Pacific coast and in the southerly extension of their breeding range. In the east *cyanocephalus* is known only as an occasional winter visitant, while *notabilis* is a regular migrant there. From the foregoing it is seen that the movement, in its entirety, of these birds from the interior to the South Atlantic States is a southeasterly movement. Their scarcity or absence at the North on the Atlantic slope evinces that the highlands are crossed in the immediate region.

The presence of *Dendroica kirtlandi* near Washington in autumn (Auk, Vol. V, April, 1888, p. 148) is explained by this southeasterly movement. It seems also that the numerous isolated autumnal instances of trans-Appalachian birds in the North Atlantic States should not be regarded as mere accidents, but rather as further manifestations of this movement—the outskirts of the great wave that sets across the continent after the breeding season in a southeasterly direction.

It is not intended to convey the idea that all migration over the mountains is strictly southeasterly. Species occurring east of the eighty-eighth meridian might follow a direct line south, particularly where the breeding range touches the mountains. Such movements might be expected of *Otocoris alpestris praticola*, *Quiscalus quiscula æneus*, *Chondestes grammacus*, *Dendroica cærulea*, *Dendroica dominica albilora*, *Dendroica palmarum*.

The extension eastward to New York and New England of the breeding habitat of *Quiscalus quiscula æneus* and *Otocoris*

alpestris praticola raises the question whether Chester County examples do not come from the eastern portions of those sections as well as from west of the mountain system. The abundance of the former in New England and its appearance here during fall associated with *quiscula* proper seems to signify that birds are drawn from both regions. *Otocoris alpestris praticola*, however, breeds too sparingly near the coast to supply many representatives by the seaboard route.

So far as the South Atlantic States are concerned, the number of characteristic species involved in this movement is at present a matter of speculation. A thorough survey of the region alone will determine the strength of the representation as well as the relative abundance of the birds now known to occur.

Whether there are meteorological conditions that specially favor southeasterly migration, might be made a theme of profitable inquiry. As set forth beyond, a correlation has been found to exist between cold and warm waves and the fluctuations in abundance of *Otocoris alpestris praticola*.

The movement from the south must now in turn be examined. The absence in spring of birds of the first category, and the rarity of those of the third, north of the South Atlantic States prove that the return over the mountains is effected in the southern portions of the system. It is obvious that the most direct route for winter residents of the Bahamas and Florida to the interior is across the mountains of the South Atlantic States. *Dendroica kirtlandi* in April in the lower part of the State (Auk, Vol. III, July, 1886, p. 412) is indication of the route from the Bahamas, as also is *Dendroica palmarum* in Chester County from the region immediately to the south and southeast. *Sciurus noveboracensis notabilis in transitu* on the Dry Tortugas (*vide* Scott, Auk, Vol. VII, p. 314) and in Chester County, vaguely marks out a line of migration from northern South America. The two instances reported from the vicinity of Washington (Auk, Vol. V, April, 1888, p. 148) are accounted extreme exemplifications of the movement from the southward, *Dendroica palmarum*, further north, furnishing an additional illustration. Whether the mountains,—especially influential factors in distribution when the season of reproduction approaches,—deflect the line of migration of these outlying birds, causing them to cross higher up, or whether they journey by a more easterly course, regardless of

land, cannot be affirmed without more definite data. The same uncertainty exists in the southerly movement as to the points of departure from the mainland, it being an open question whether all follow the coast to Florida, or whether the transit is made in the most direct way.

The comparative abundance of *Helminthophila peregrina* in fall in Chester County is seemingly due to transalpine migration, as the species is reported rare along the Atlantic slope at the northward. Its apparent absence in spring is probably occasioned by the majority following the Mississippi Valley at that season. *Geothlypis agilis* seems to afford a parallel case further north.

It may well be asked whether the southeasterly movement is confined to certain characteristic species, or whether it embraces many that are common both to the interior and to the Atlantic slope, or whether its proportions are vaster still, involving, to a greater or less degree, all the migratory birds of North America. The conformation of the continent favors such a movement. A glance at the map discovers the southeasterly trend of the coast along the Pacific from Cape Mendocino to the Isthmus of Panama. A migration extending through Mexico and Central America would be a southeasterly one, while a movement from the South Atlantic States to the outer West Indies would certainly be southward and eastward if not directly southeast.

To recapitulate, a wide-spread movement of characteristic trans-Appalachian birds occurs after the breeding season, sweeping over the country from the northwest to the southeast, the main portion of the eastern wing crossing the Appalachian highlands in the South Atlantic States, its extreme outskirts reaching northward along the whole Atlantic slope. Some of the representatives of this movement stop short their journey on arriving on the South Atlantic seaboard, while others, occurring there as transients or wintering numerously, extend their migrations beyond to the Bahamas and Greater Antilles and northern South America.

In the complementary movement from the southeast to the northwest, the western winter visitors of the South Atlantic States disappear behind the mountains and their places are filled by the returning migrants, and the movement is felt along the whole Atlantic slope, strongly in the South Atlantic States and

feebly to the northward. It is not strange then that Chester County, a mere point in the pathway of these vast movements, should feel their influence in so marked a degree.

The appended notes pertain (1) to the birds added since the appearance of the last list; (2) to those, noteworthy ones, previously noticed, which have been found in greater abundance or at other seasons than recorded; (3) to those reflecting in an especial manner the different phases of the migratory movements, treated of at length beyond. The numbers below 141 refer to the 'Partial List,' from 141 to 180, inclusive, to the 'Supplementary Notes'; above 180 are additional. In the matter of dates the whole fourteen years have been passed in review and the normal extremes selected. The minor observations omitted in the present paper have been reserved for another connection.

181. *Urinator imber*. LOON.—Of the occurrence of the Great Northern Diver on the Broad and Catawba I have long been aware, but the fact of its presence has remained unverified by a specimen until the present year (1890) when a bird in immature plumage was shot April 26, on the latter river.

182. *Urinator lumme*. RED-THROATED LOON.—A young male was captured, alive and unhurt, on the morning of February 28, 1885, in a field of oats near the town of Chester. This locality, which is on the dividing ridge between the Broad and Catawba Rivers, is somewhat remote from any extended body of water, the nearest considerable stream or mill-pond being several miles distant. Attention was first directed to the bird by its loud and unusual cries. On removing the skin, the body was found to be very greatly emaciated.

183. *Porzana noveboracensis*. YELLOW RAIL.—In 1887 a female was shot Nov. 12, and a male Nov. 23. Dec. 10 of the same year another was seen. This latter instance seems to indicate that the species will ultimately prove to be a winter resident, but it should be borne in mind that the winter of 1887-88 was one of unwonted mildness in this region. In October, 1890, a fourth example was noted.

184. *Porzana jamaicensis*. BLACK RAIL.—Sept. 3, 1887, an adult female was killed with a pitchfork in a little hillside sink from which the grass was being cut.

As to the abundance of the Rails of our local ornithology, as well as of the dates of their appearance and disappearance, I am unable to speak with certainty. The time required for the systematic investigation of these points has heretofore been devoted to the study of the birds of the woods and fields.

185. *Nyctea nyctea*. SNOWY OWL.—During the early part of December, 1886, I saw an individual several times under circumstances that

dispelled all doubt from my mind as to its identity. That this Owl occasionally wanders southward to South Carolina has long been a matter of record. Bartram mentions its occurrence in his 'Travels' (second edition, 1794, p. 285), and Audubon ('Ornithological Biography,' Vol. II, p. 137) notes its presence at Columbia and in the vicinity of Charleston.

104. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER.—Red-headed Woodpeckers were common through the winter of 1877-78 in the immediate neighborhood of the County Seat. During the previous winter they were not present, but through several subsequent winters a few stragglers remained. Of late years, until the past season, when a single bird was observed, they have entirely forsaken its vicinity from October to April. Back in the County the case is somewhat different. In the winter of 1884-85 a colony was established in a large piece of original hardwoods four miles north of the County Seat, but they were not met with in this situation in succeeding winters until December, 1887, and then in greatly diminished numbers. Toward the close of December, 1884, they were common in the northeastern part of the County near Landsford on the Catawba River. I have not visited that section since in winter, and do not know whether they have regularly continued to reside there. A friend, however, has informed me of their occurrence in midwinter, 1888-89. During a ride of forty-five miles, taken December 29, 1885, through the northwestern portion of the County, in the vicinage of the Broad River, only a single individual was encountered, and this one, which was the only one seen during the winter, was within seven miles of the Court-House. In December, 1887, and January, 1888, considerable time was spent in riding over the country adjacent to the County Seat, but only very few 'Redheads' were noticed, and none nearer than four miles, and all on ground wholly unoccupied the winter before. During the winter of 1888-89 not one was seen, although several extended excursions were made. The past season (1889-90) extensive field investigation failed to reveal the presence of this species except in the instance mentioned.

From these observations it is apparent that a territory may be occupied one season and partially or wholly abandoned the next, and that in the lapse of time, with the shifting of the local centres of abundance, it may again come, in a varying degree, into favor as a winter resort. In the breeding season and during the height of the migrations there is, also, in a series of years, a fluctuation in the scale of abundance, but I have no personal knowledge of a complete desertion of a locality during the former period. I am unable to assign any satisfactory reason for their erratic distribution and migrations. The ordinary explanations advanced—unusual persecution, great changes in the face of the country, severity of seasons, obvious failure of the food supply—do not adequately account for their movements. It should be added further that these singular removals are so marked and well known that they have long attracted the attention of observant country residents.

22. *Otocoris alpestris praticola*. PRAIRIE HORNED LARK.—Mr. Henshaw's elaborate review of the Horned Larks led me in the winter of

1886-87 to study anew the birds of this locality. The result of this investigation showed that *praticola*, one of the newly described races, was at least an occasional visitant. With the view of determining the precise status of this subspecies, as well as of *alpestris* proper (the style currently believed to occur in upper South Carolina), systematic observations were made through the three following winters, but instead of finding *alpestris*, as had been confidently expected at the outset, only *praticola* was discovered. The appearance of Mr. Ridgway's 'Manual,' with its broadened characterization of the latter form, further disclosed the fact that a series of measurements taken at intervals during the decade previous to 1886 were typical of *praticola*, and that *alpestris* had never been secured. The uniformly small size of these examples had attracted my attention from the outset.

The past three winters were exceptionally mild throughout this region, and therefore apparently inauspicious for the occurrence of Prairie Horned Larks. However, the continuous effort put forth developed them in unexpected numbers. The earliest arrivals each year were noted during the last week of November, their coming being coincident with a colder term. Through the ensuing two months they were constantly present, and straggling bands remained until the close of February. During December and January the changes in temperature which occurred, though not extreme, were accompanied by marked fluctuations in abundance—the cold waves re-enforcing, and the warm ones diminishing their ranks. On several occasions an increase took place when there was no specially noteworthy fall in the mercury, but cold spells were prevailing in the northwest. While the periods of greatest abundance have been during the severest stresses of weather (as in December, 1876, and January, 1877, when the snow lay on the ground for the longest time in my remembrance), the last three seasons have demonstrated that these birds are not uncommon here during the mildest winters, and that their presence is not dependent upon extreme inclemency in the immediate vicinity. The companies in which they congregate have varied in extent, the past three winters, from little squads of half-a-dozen to flocks of above a hundred, the average being from twenty to thirty. In former years the gatherings have not differed materially in size, except in January, 1877, when a single assemblage of several thousand was met with after the snow had disappeared.

In recording the experiences of the previous winter in 'The Auk' for April, 1888, mention was made of the fact of the great excess in number of females. The subsequent two years have exhibited a similar preponderance—the males secured being less than twenty per cent of the total of females.

The particular attention paid of late to these Horned Larks has further revealed that they are extremely partial to certain restricted localities, and that considerable territory might be examined without their presence being detected, except when transient parties were passing overhead from one rendezvous to another. Each year these favored situations have been

re-occupied, while other locations apparently not dissimilar have been discarded. A single field is often the centre of attraction, and here the birds are always certain to be found. If persecuted they leave the spot with reluctance, repeatedly returning before seeking a retreat in some other quarter of their range—the flocks when broken up coming back in detached companies. In the times of greatest abundance they are more generally dispersed, the Northern hordes overflowing the narrow bounds held in occupancy in ordinary seasons. Barren upland pastures, where the grass has been cropped to the roots, and wind-swept grain fields are, above all other situations, chosen by them. Cotton-fields where the stalks are small and the ground free from grass are also much frequented. If these congenial haunts abound in small stones, a further attraction is afforded. In all, the color of the surroundings harmonizes so nearly with the color of the upper parts of the birds as to render them exceedingly inconspicuous.

I now believe that every year Prairie Horned Larks are regular visitors and that their reported absence in some winters was due to an inadequate knowledge of their habits and distribution.

In the subjoined table are the dimensions of forty-two males and two hundred and twenty-five females, representing two series; one of twenty-six males and one hundred and thirty-three females, procured during the winter of 1887-88, and the other of sixteen males and ninety-two females obtained during the ensuing winter. All the measurements that follow are in millimetres. They were originally taken in inches and hundredths and then reduced to the metric equivalents.

	Sex	Length		Extent		Ch'd of wing		Longest rectrix	
Maximum	♂	187.96	185.42	337.82	340.36	106.17	105.66	79.75	80.01
Minimum	"	176.53	175.26	320.04	317.50	99.82	99.31	69.85	70.10
Mean	"	181.36	180.34	330.96	326.39	102.87	102.61	75.94	75.44
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Maximum	♀	173.99	173.99	320.04	317.50	99.82	99.82	73.15	73.40
Minimum	"	162.56	162.56	299.72	299.72	91.95	91.95	62.23	65.02
Mean	"	169.16	168.66	310.64	308.36	95.75	96.01	68.32	68.83

The maximum extremes were not derived from single specimens, and are thus not necessarily indicative of direct approaches toward *alpestris* or *leucolæma*. In the first series of females they were furnished by the combined dimensions of two birds. In the second the maximum wing, 99.82 mm., occurred in an individual whose length was only 166.37 mm., and tail, 69.34 mm., while the longest tail, 73.40 mm. appeared in one in which the entire length was but 171.45 mm., manifesting that the total length is diminished by the shortening of the body as well as by the shortening of the rectrices. The chief length, 173.99 mm., was attained in twelve instances in the first series and in but three in the second. The following measurements of females further attest the absence of a uniform variation in the proportions of many examples:—

Length	Chord of wing	Longest rectrix
173.99	99.82	72.64
166.37	99.82	69.34
173.99	98.29	70.86
171.45	96.52	73.40
166.37	97.79	71.37
163.32	97.02	67.56
168.91	93.98	66.80
168.66	98.80	71.12
168.66	94.74	70.61

The minimum extremes of the females for both seasons represent the actual size of the two smallest ones. In the males, however, these were obtained from different specimens. It will be noticed that the wing and tail measurements of the smallest males and the largest females overlap. Where there is such wide individual deviation, it is remarkable that the general averages of the two series differ so little. This is further illustrated in the appended table of the means of three groups of females—the product of three days' shooting (Nov. 24, 29, Dec. 8, 1888) in a single field:

No. Spec.	Length	Extent	Chord of wing	Longest rectrix
13	168.40	308.10	96.26	69.34
20	169.16	308.36	96.01	68.32
12	169.16	308.36	96.01	69.34

The great uniformity with which the Horned Larks of this section fall within the limits prescribed for *pratricula*, evinces that they are drawn from the centre of distribution of the subspecies during the breeding season and not from the confines of the habitat of another form.

(To be concluded.)

DESCRIPTION OF A NEW SUBSPECIES OF CYPSELIDÆ OF THE GENUS *CHÆTURA*, WITH A NOTE ON THE DIABLOTIN.

BY GEORGE N. LAWRENCE.

Chætura dominicana colardeaui.

Chætura, LAWRENCE, Proc. U. S. Nat. Mus. 1885, p. 623.

Male.—Crown, lores, and upper plumage black; rump brownish ash-color; upper tail-coverts brownish black; tail black; the spines project

three sixteenths of an inch beyond the webs; wings black; the secondaries and tertiaries at their ends are edged with ash; chin, throat, and upper part of breast dark grayish cinereous; lower part of breast and abdomen smoky brown; a stripe of clearer brown down the middle of the abdomen; under tail-coverts black; bill and feet black.

Length (skin) $4\frac{3}{8}$ inches; wing $4\frac{1}{4}$; tail to end of spines, $1\frac{1}{8}$; spines, $\frac{3}{16}$.

Type in American Museum of Natural History, New York.

HABITAT.—Guadeloupe, West Indies.

REMARKS. This species at first sight somewhat resembles *C. dominicana* from Dominica, but differs in having the upper plumage rather blacker, and the ash-color of the rump less in extent; in their under plumage they are quite different, the new subspecies having the throat, neck and upper part of the breast grayish cinereous; the lower part of the breast and abdomen are smoky brown; while in the other the entire under plumage is of a clear brown, with a few grayish feathers on the upper part of the throat; in the Dominica bird the under tail-coverts are dark brown, and the feet yellowish; in the Guadeloupe bird the under tail-coverts and the feet are black; the tail feathers of the new subspecies are narrower than those of *C. dominicana*; in this the feathers are broader and continue so to their ends, those of the Guadeloupe bird being somewhat tapering.

It is with pleasure I confer upon this species the name of my friend, Dr. St. Felix Colardeau, who has shown much intelligent interest in procuring the birds of Guadeloupe.

I have been desirous of obtaining this bird ever since it was noticed in a list sent by Dr. Colardeau in 1885, and have had promises to endeavor to procure it from both him and his son; why it was not obtained sooner is explained in Dr. Colardeau's letter; he writes under date of August 5 as follows:

"After the return of my son from the United States he was so long and so dangerously ill from pleuro-pneumonia that I gave up entirely going hunting for birds, and my work away from woods and fields prevents me also to do as before. My son is now well again, and I have been able to make a few small collections. I have a number of sea and water birds which I intend to send you.

"This day I send you by mail the small Swift I have spoken of; they are very scarce in town, where I live now, and cannot get them any more, as we used to, at my old home in the moun-

tains. I succeeded in shooting this one from the window of my room about three months since.

"Perhaps it is a new bird, perhaps it is not; it is the same *Chætura* I described to you some years ago."

In a letter dated Nov. 11, in reply to one from me wishing more specimens, etc., he says:

"I always thought as you did at first, that the Swift I sent you was no other than the Dominican bird, *C. dominicana*, from the written description I had taken of it, when I could easily procure many specimens. I will try hard to send you more specimens, but I am no more residing where it is easy to get them.

"I believe I have already told you that the small Swift must breed here, as those we had shot on my plantation in June had hard shelled eggs ready to be laid."

Mr. Cory kindly lent me a specimen of this species collected for him by Mr. Winch in Guadeloupe, which agrees in every respect with the type.

NOTE ON THE DIABLOTIN.

Young Mr. Colardeau informed me, when here, that he understood the Diablotin had returned to Guadeloupe. I requested him to get all the information he could respecting it. Dr. Colardeau writes me:

"I do not believe the Diablotin is extinct in our Island; only we have no more the old sportsmen who used to go after them out of pure frolic, with plenty of dogs and black servants, when I was a child some fifty years ago. The Diablotin is not pure black, that I feel certain from distinct recollection, and you may consider the specimens sent by the old Dr. L'Herminier as correct, as he was one of those old sportsmen I have just spoken of, who, in company with my great uncles, grandfather and other relatives and friends used to go after them amongst the rocks and mountains surrounding the Soufrière. A few years ago, even as low as Camp Jacob, there was a Diablotin caught by a dog in a hole in the bank of a mountain stream. The master of the dog was satisfied to eat the bird, and I only knew of it when it was too late. The bird was black above and white below, crooked beak, and webbed feet."

From the description given by Dr. Colardeau of the specimen obtained in Gaudeloupe lately, it was probably *Æstelata hesitata*, which species Prof. Alfred Newton determined the specimens sent by L'Herminier to Lafresnaye to be.

Pere Labat gives a black figure of it, and also describes it as being black; the question arises whether there are two birds bearing the name of Diablotin, or whether his description is erroneous.

DESCRIPTION OF A NEW SPECIES OF *RAMPHOCELUS* FROM COSTA RICA.

BY GEORGE K. CHERRIE.

Ramphocelus costaricensis sp. nov.

Above, whole head varying from a dusky slate black to a slate gray; back and scapulars dusky yellowish olive; rump and upper tail-coverts ochraceous rufous of varying intensity in the different specimens. Wings dusky brownish black, inner webs of quills darkest; tail blackish. Below, chin and throat grayish; breast ochraceous rufous like the rump; the rest of lower parts yellowish olive, darker along the sides. "Bill black with plumbeous base. Feet, dark plumbeous." Female similar.

Measurements (in inches) of six skins.

Number	Locality	Date	Sex	Wing		Tail feathers	Exposed culmen	From nostril to tip of bill	Gonys	Tarsus
2181	Pozo Azul	Nov. 10, 1887	♀	3.14	3.20	2.74	.60	.50	.38	.94
2182	" "	" 8, "	♀	3.07	3.20	2.75	.58	.50	.37	.88
3271	" "	Sept. 12, 1889	♀	3.05	3.22	2.92	.63	.50	.36	.85
3272	" "	" " "	♀	2.95	3.19	2.74	.64	.52	.37	.86
3273	" "	" 9, "	♂	3.06	3.30	2.87	.63	.50	—	.92
3274	" "	" 9, "	♂	3.16	3.10	2.65	.62	.50	.38	.87
Average				3.07	3.20	2.78	.62	.50	.37	.89

HABITAT.—Pozo Azul, Costa Rica.

Types in the Costa Rica National Museum, numbers 2181 and 2182, females collected in November, 1887, and numbers 3271, 3272, 3273 and 3274, two males, one female and one in which the sex is not indicated, collected in September, 1889. The six examples were collected and presented to the Museum by Señor Don José C. Zeledón.

The general coloration of this bird is very similar to that of the females of *Ramphocelus passerinii*, but while in many of the females of the latter species the breast and rump is brighter colored, the color is of a rich golden yellowish olive not in any way resembling the ochraceous rufous of the present species; neither is the tail so dark, being dusky brownish black instead of clear dusky black. The two are distinguishable at a glance. The wing formula is also slightly different, as out of twenty-five examples of *passerinii* examined only one was found having the first primary as long as the eighth; while in the new species the first primary is intermediate between the seventh and eighth.

The bill is similar in form to that of *R. passerinii*, but there is no appreciable difference between that of the male and that of the female. It is on this character,—the form of the bill, with “peculiar enlargement of the naked base of the lower mandible”—together with the general resemblance in pattern of coloration, so similar to that of the females of *R. passerinii*, that I have been led to refer the species to the genus *Ramphocelus*. I am informed by Mr. Zeledón that it has exactly the same habits and call-notes. In the sexes being alike, one of the characters hitherto held as common to the genus is destroyed. But the form of the bill, together with the pattern of coloration, seems to me to exclude it from the genus *Phlogothraupis*, in which the sexes are alike. The only points in which it agrees with that genus are the similarity of the sexes and the first primary being intermediate between the seventh and eighth. In the nine specimens of *P. sanguinolenta* in the collection I find that eight have the first primary intermediate between the seventh and eighth, and in the other example the remiges are not fully grown. But this latter character may be shared by some other members of the genus *Ramphocelus*; not having specimens for examination I am unable to say.

R. passerinii is slightly the smaller, the average measurements of twenty specimens from the collection, ten males and ten fe-

males being as follows:—Wing, 2.96 inches, tail, 3.13; tail-feathers, 2.71; exposed culmen, .57; nostril to tip of bill, .48; gonys, .36; tarsus, .85.

R. costaricensis seems to be an entirely local species, differing from *R. passerinii*, of which species the Museum possesses a large series from various localities, both on the Atlantic and on the Pacific sides of the Cordillera, including Pozo Azul where the two are found in company. Pozo Azul is situated about thirty miles southwest of San José, just at the foot of the hills where the level belt of the Pacific coast begins. For this reason and from the fact that I have not met with the bird in the extensive series of specimens I have examined from the Atlantic region, I am inclined to believe it a species confined to the southwest coast region.

I would here express my thanks to Mr. J. C. Zeledón for kind suggestions in regard to the present paper.

THE BIRDS OF ANDROS ISLAND, BAHAMAS.

BY JOHN I. NORTHIROP.

THE ISLAND of Andros is the largest of the Bahama group, being about ninety miles long, and forty or fifty miles across at the widest part. The southern portion is separated from the northern by shallow waters called 'bights'; but these are so filled with cays, as to make it convenient to include all the islands under the general name of Andros.

Like all the others of the group, Andros is entirely of coral formation. The country is described by the natives as either 'coppet', 'pine-yard,' or 'swash.' The first term is applied to the thicket of angiospermous trees and shrubs that occupies the ridge along the eastern coast. In most places, this belt is very narrow, but near the southern end it extends several miles into the interior. Back of the coppet, the land is comparatively level, and is covered by a forest of the Bahama Pine (*Pinus bahamensis*). As one approaches the west coast, the pines become smaller and are mingled with palmettos; finally both cease, and one sees

spread before him thousands of acres of level plain, supporting scarcely any vegetation except countless dwarf mangroves. Here the ground is soft, and in wet weather almost entirely under water; hence the peculiar appropriateness of the local term 'swash.' Such is a brief description of the physical features of Andros. As might naturally be supposed, the coppet proved the best collecting ground for land birds, while the swash, and the lakes it contained, were well stocked with many aquatic species.

Although Andros is the largest of the Bahama Islands, it seems never to have been thoroughly explored by naturalists. The first record of Bahama birds is given by Catesby* who visited Andros. In 1859 and again in 1866 Dr. Bryant made a collecting trip through the Bahamas and published the results in the 'Proceedings' of the Boston Society of Natural History. His two papers are devoted to ornithology and contain several references to Andros. Mr. C. J. Maynard in 1884 spent some time on Andros and has published a few notes on its birds and described some new species.† Mr. Cory has also made an ornithological trip through the Bahamas, during which he visited the eastern coast of Andros. The results of his work are published in a well illustrated volume entitled the 'Birds of the Bahama Islands.' Mr. Ingraham has also visited Andros, but I have been unable to find any notes by him on its avifauna. These, I believe, are the only naturalists who have ever honored Andros with a visit.

As this island is separated from both Florida and Cuba by nearly the same distance (about one hundred and twenty miles) the writer thought that a collection of its birds might prove interesting. It may, however, be well to state that the object of the visit to Andros was not to make a collection of birds, and that lack of time and assistance prevented us from obtaining larger series. Before going to Andros, some time was spent on the island of New Providence, the western end of which is about twenty-five miles from the nearest point of Andros. There a few birds were collected, and these will be referred to in the list that follows. I was accompanied during the trip by Mrs. Northrop, who made notes on the occurrence of the birds, and more particularly on their songs and habits; and many thanks are due her for aid in the preparation of this paper.

*Nat. Hist. Carolina, Florida, and the Bahama Islands.

†American Exchange and Mart and Household Journal, Vol. III.

We reached the northern part of Andros on March 14, 1890, and left the southern end on the 3d of July, during that time sailing almost completely around the island; exploring the majority of the creeks on both the east and west coasts, and passing through the bights in the central part. But the greater portion of the time was spent in the various negro settlements that were scattered along the eastern coast, hence we had ample opportunities for observation, and for obtaining what is probably a quite complete collection of the birds of the island.

Dr. Allen has kindly annotated the list, and thanks are due to him and to his assistant, Mr. Chapman, for aid in determining several of the species.

The collection includes 286 specimens; and in it are represented 12 orders, 27 families, 56 genera, and 74 species. Of these one, that Dr. Allen has done us the honor to name *Icterus northropi*, is new to science; and *Nycticorax nycticorax navius* is new to the Bahamas, while *Geothlypis rostrata* has hitherto been found only on New Providence.

Unless otherwise stated, all the birds mentioned in this paper were actually obtained, and are now in the Museum of the School of Mines, Columbia College. I have added to the usual common names the local names of the birds.

1. *Mimocichla plumbea* (Linn.). BLUE THRASHER.—This Thrush was common in the high coppet near Deep Creek, not far from the southeastern extremity of the island. Two specimens were also obtained near the northern end, but none were seen in the pines or in the swash on the west side. The bird hops about on the ground or on the lower branches of the trees, its black throat and red legs rendering it quite conspicuous. The stomach of one examined contained fruits. Those shot on June 28 were in condition to breed.

*2. *Galeoscoptes carolinensis* (Linn.). CATBIRD.—The Catbird was very common at Nicol's Town near the northern end of Andros during March and April, and the last specimen was seen at Mastic Point about May 23.

3. *Mimus polyglottos* (Linn.).—Locally known as Brown Thrasher and Mocking Bird. My specimens were all collected near the northern end of Andros, the first on March 25, the last on April 16. They were quite common about our house at Nicol's Town, and their song could be heard at almost any hour of the day. It was loud and varied, each syllable usually being repeated three times. It often sounded as if they

*The star prefixed to a number indicates that the species was observed by Mr. Scott at the Dry Tortugas. See beyond p. 69.

were trying to decline the familiar '*hic, huc, hoc*' after a fashion of their own, and we imagined we could plainly distinguish '*hujus, hujus, hujus,*' '*huic, huic, huic.*' '*his, his, his,*' given with great emphasis. While on the western coast in June, we noticed what was undoubtedly one of these Mockingbirds, perched on the top of a palmetto. He was singing, apparently with all his heart, and attracted our attention by springing up into the air a few feet, then dropping to his perch again. This he repeated three times, singing all the while; we afterwards saw another bird go through the same performance.

The stomachs of the specimens examined contained the remains of the fruit of the gum elemi (*Bursera gummifera*), white ants, and pieces of snail shells.

[The three specimens referred to this species are indistinguishable from *M. polyglottos* of the Carolinas or Florida. They are hence very unlike the small form of *Mimus* from Inagua, recognized by Mr. Sharpe as *M. elegans*.—J. A. A.]

4. *Mimus gundlachi* (*Caban.*).—This was more common than the species above described, as we found it wherever we landed. Its song is louder, clearer, and more varied than that of *M. polyglottos*. Its food consists of fruits of various kinds, but in the stomach of one specimen some small bones were found, probably those of an *Anolis*. The ovaries of a specimen shot on May 15 were much enlarged. The inhabitants of Andros do not distinguish between these two species, calling both either Brown Thrushes or Mockingbirds.

[The series of seven specimens presents a wide range of variation in both size and color. In the largest specimen the wing measures 4.73 inches, the tail 5.33; in the smallest specimen the wing measures 4.23, the tail 4.60. In one specimen the cheeks, sides of the throat and the lower throat are thickly and heavily spotted, and the streaks on the flanks are very broad. In another the cheeks and sides of the throat are scantily barred and the lower throat is without spots. The other specimens are variously intermediate between these. The difference in size may be in part sexual.—J. A. A.]

5. *Poliophtila cærulea cæsiogaster* (*Ridgw.*). BLUE-GRAY GNAT-CATCHER.—This species was very common in the low shrubs that grew in the pine-yard. It was a most confiding little bird, and would sit within a few feet of you, twitching its head from side to side and uttering its low, wheezy little song, apparently always very well pleased with its own efforts.

*6. *Compsothlypis americana* (*Linna.*). PARULA WARBLER.—This Warbler was collected in the northern part of Andros on March 26 and April 19. It was only seen in two localities, and was not common.

*7. *Mniotilta varia* (*Linna.*). BLACK-AND-WHITE WARBLER.—First seen at Nicol's Town on March 17. In a week or two they became quite numerous about the house, but none were seen after the end of April. The three specimens procured were all males. Their stomachs contained the remains of beetles.

*8. *Dendroica tigrina* (Gmel.). CAPE MAY WARBLER.—This species was not common. Specimens were collected on March 22, and on April 20, two on the northeast coast, one near the west side.

9. *Dendroica petechia* (Linn.). ANTILLEAN YELLOW WARBLER.—But a single specimen, a female, was obtained near Mangrove Key on June 24.

*10. *Dendroica cærulescens* (Gmel.). BLACK-THROATED BLUE WARBLER.—One specimen was brought to us in Nicol's Town, April 11; others were collected on April 19 at Red Bays on the northwestern end of Andros. They were quite common about the house for a few days, but none were seen after the above date.

*11. *Dendroica striata* (Forst.). BLACKPOLL WARBLER.—The specimens were all obtained at Conch Sound on May 19 and 20, although it was seen a little farther south on May 23, and even a day or two later.

12. *Dendroica vigosii* (Aud.). PINE WARBLER.—This bird was one of the most common species in the pine-yard. The five specimens collected all proved to be females. The stomachs of those examined contained insects and small fruits.

13. *Dendroica discolor* (Vieill.). PRAIRIE WARBLER.—This was by far the most common of the migratory Warblers. It was collected on the northern end of Andros from March 22 to April 12, and a few were seen during the latter part of April.

*14. *Dendroica palmarum* (Gmel.). PALM WARBLER.—A single specimen, a female, was shot at Mastic Point, May 2; it was hopping about on the ground under the small mangroves.

*15. *Seiurus aurocapillus* (Linn.). OVENBIRD.—This species was collected in several localities on the northern end of the island. At Red Bays on the west side it was quite common, and the natives knew the bird well under the name of the 'ground walker'. All whom we questioned on the subject were certain that the bird remained throughout the year, and some said that they had seen its nest.* A specimen was collected by the writer on New Providence during January, and the last time that we observed it was in the first week of May. The stomachs of those examined contained the remains of insects.

[Four specimens taken on Andros Island, near the end of April, probably represent a local resident form, differing slightly from the North American stock in having the bill rather larger, the crown patch deeper orange, and the black lines bordering it and the black streaks below slightly heavier. Should these differences prove tolerably constant, they are too slight to render it desirable to designate the form in nomenclature.—J. A. A.]

16. *Geothlypis rostrata* Bryant. NASSAU YELLOWTHROAT.—This species is new to the island, all the specimens previously known being from the neighboring island of New Providence. The first we saw was brought to us by a boy at Nicol's Town, March 21. It was afterwards seen at Red

*Cory states that it is migratory.—Birds of Bahamas, p. 71.

Bays, Conch Sound, and later at Mangrove Key on June 25. It frequents the thick underbrush of the coppet, and was always seen quite close to the ground. *G. trichas* was also collected, but the difference between the two birds was very noticeable, *G. rostrata* being considerably larger and much lighter in color. Its song was also louder and sweeter.

[The single specimen, male, is nearer *G. rostrata*, than any other of the described forms, differing from it in its much shorter and slenderer bill, with the crown of a deeper and more bluish gray. Mr. Ridgway, who has examined the specimen, says: "Intermediate between type of *G. rostrata* and *G. tanneri*; bill entirely like the latter; color above brighter olive-green than in either." While doubtless representing a well-marked local race, it seems hardly worth while to give it a name on the basis of a single specimen.—J. A. A.]

* 17. *Geothlypis trichas* (Linn.). MARYLAND YELLOWTHROAT.—This species was seen on both the east and the west side of Andros from April 12 to 19, but there is no note of its appearance later. Of the five specimens collected, four were males. It is interesting to note that Dr. Bryant states that of a flock of birds flying past his vessel in the harbor of Grassy Creek, in the southern part of the island, on April 20, 1859, all were males.

* 18. *Setophaga ruticilla* (Linn.).—AMERICAN REDSTART.—This Warbler was first seen at Nicol's Town on April 10, and the last specimen was taken May 20; one was seen a month later, however, on the west coast.

Since this paper was written an interesting article by Mr. W. E. D. Scott has appeared in 'The Auk' * on the 'Birds Observed at the Dry Tortugas, Florida, during parts of March and April.' As I was collecting on Andros during the same time, I thought it would be interesting to note the species common to both places and have hence prefixed an asterisk to those mentioned in Mr. Scott's paper. A reference to his paper will show that he secured many Warblers that I did not, and a comparison of his dates with mine shows that with the exception of *Mniotilta varia*, *Dendroica tigrina*, *D. cerulea*, and *Geothlypis trichas*, the birds were observed later in Andros than at the Dry Tortugas. The commonest Warbler at the latter place was *D. palmarum* of which I only secured one specimen, and no more were seen, while *D. discolor*, the commonest Warbler in Andros, was "not uncommon" with Mr. Scott. I doubt, however, if any inference of importance can be drawn from these facts.

In regard to the occurrence of the Warblers above-mentioned it may be worth while to state that they appeared in 'waves.' The most noticeable of these was on April 18. We had been at Red Bays on the west side for a week, and had seen very few birds about,—but a bird wave must have arrived during the night of the 18th, for the next day the grove about the house was full of birds,—the Black-throated Blue, the Blue Yellow-back, the Redstart, Black-and-white Warbler, and *Vireo altiloquus barbatulus* were seen here for the first time, and in considerable numbers.

* Vol. VII, p. 301.

19. *Cœreba bahamensis* (Reich.). BAHAMA HONEY-CREEPER. 'BANANA BIRD.'—Common throughout the island except in the swashes. The state of the generative organs of those taken near the end of March indicated that the birds were nearly ready to breed.

* 20. *Calichelidon cyaneoviridis* (Bryant). BAHAMA SWALLOW.—This beautiful Swallow was first seen on New Providence and was afterwards found to be abundant on Andros, particularly in the clearings. They generally flew quite close to the ground. Dr. Bryant in the 'Proceedings' of the Boston Society of Natural History, Vol. VII, page 111, says that of those collected by him up to April 28, the genital organs exhibited no appearance of excitement. On April 15 I collected a male with the testes much enlarged. The people told me that the Swallow breeds on the island, building under the rocky ledges; but we were not fortunate enough to find a nest.

21. *Vireo crassirostris* Bryant. LARGE-BILLED VIREO.—Common at most places on the island, and its cheery little song was almost constantly heard from the bushes and low trees that the bird frequents. On May 24 the generative organs of the male were enlarged.

[The four specimens seem distinctly referable to *V. crassirostris*.—J. A. A.]

* 22. *Vireo altiloquus barbatulus* (Cab.). BLACK-WHISKERED VIREO.—The first specimen of this bird was seen at Red Bays on the western side of the island, about April 18. On our return to the east coast we found it common, and later noted it as quite abundant at all our stopping places; and its song, so well described by Dr. Bryant as "*whip Tom Kelly, phew*," was one of the most common notes of the coppet. Dr. Bryant says that the seven specimens collected by him were all males, and thinks that the females "had not arrived by the 13th of May." As I collected the first female on May 24, having previously shot two males, this surmise is probably correct. The genital organs were noted as being enlarged from May 10 to June 5, when the last specimen was shot. Some of the birds were mated and apparently ready to breed.

23. *Spindalis zena* (Linn.).—This bird, called by the natives 'Tom James' Bird' and 'Robin Redbreast,' was very common in the coppet and the pines. It is one of the most conspicuous birds of the island, as well as one of the tamest, being quite often caught by the children. They seemed to be particularly fond of the fruit of the gum elemi (*Bursera gummifera*) and of the ripe figs. About May 20 the genital organs were enlarged.

* 24. *Piranga rubra* (Linn.). SUMMER TANAGER.—A single specimen, a male, was taken at Red Bays, April 19. We showed it to some of the natives, but they had never seen any like it. As its color would render it conspicuous, we may infer that it was not a regular visitor, but, as stated by Cory in his 'Birds of the West Indies,' p. 85, is only accidental in the Bahamas.

25. *Loxigilla violacea* (Linn.). VIOLET GROSBEAK.—Known by the natives as the 'Spanish Paroquet,' and quite abundant both in the coppet

and the pines. The males vary much in color, some being a brilliant black, while others are only dusky; this difference is more apparent in living than in dead specimens. Both sexes also vary in size. Some of these birds were brought to us alive by the negro children, and I soon learned by experience that they not only were pugnacious but could inflict quite a painful bite with their strong beaks. The generative organs of a male collected May 30 were considerably enlarged.

26. *Euetheia bicolor* (Linn.). GRASSQUIT.—Very common both in the pine-yard and in the coppet, and the most abundant species of land bird on the island. They were very tame and allowed one to approach within a few feet, and while we were at Nicol's Town, several of them flew through the house at various times. They seemed to vary a great deal, some of the males having the head and breast black, while others were much lighter with only the throat and chin black, more like the average female; in these the under mandible were also much lighter. They seemed to have mated even in April, as they were usually seen hopping about in pairs.

27. *Icterus northropi* Allen. NORTHROP'S ORIOLE. — (See Pl. I.) Description and notes of this bird were published in the last number of this periodical (Vol. VII, p. 343).

28. *Agelaius phoeniceus bryanti* Ridgw. BAHAMAN REDWINGED BLACKBIRD.—This bird was found generally distributed over the island, and was the presiding genius of its creeks and swashes. On the west coast especially his flute-like 'okralee' was the most familiar note. The birds were usually in small flocks, but there always seemed to be a great preponderance of males. Beyond doubt, however, the latter knew that their plainly dressed mates were near, much oftener than we, for a number of times we saw one half raise his wings so as to expose his brilliant epaulets, and sing with all his heart, fluttering his wings at every note. On two occasions while visiting a large mangrove near Mastic Point, we remained until after sunset and watched the Redwings fly out to roost there. The mangrove, about two miles from shore, was very large, and accommodated hundreds of feathered guests nightly. There were Man-o'-war Birds, White-headed Pigeons, and Louisiana Herons, but the most numerous as well as the noisiest lodgers were the Redwinged Blackbirds. They began to arrive about five o'clock, flying in from the mainland by twos and threes, or sometimes singly, until at last the portion of the mangrove that they occupied was seemingly alive with them. There must have been several hundred, males, females and young, and they kept up a constant chorus of hoarse chirps, screams and gurgling 'okralees' until quite a while after the sun had set.

29. *Pitangus bahamensis* Bryant. BAHAMA KINGBIRD. 'FIGHTER.'—Not uncommon in many parts of the island. I have nothing to add to Dr. Bryant's account of its habits,* except that in the stomach of one some fruits of the gum clemi were found, showing that its diet was not entirely insectivorous.

* Proc. Boston Soc. Nat. Hist., Vol. VII, p. 108.

30. *Blacicus bahamensis* (Bryant). BAHAMAN WOOD PEWEE.—This small species, of which Dr. Bryant says he only saw three specimens, all in the month of March, we found common on the island, not only in the coppet, but also in the pine-yard, and even occasionally in the swashes. At one of our stopping places two or three were always to be seen flying about near the house. They were very fearless, and several times flew so close as to touch us. One seemed to be particularly tame and would fly in at the door or window or about our heads with perfect unconcern. He had several favorite perches about the house, on one or another of which he was to be found at any time of day, cocking his little head from side to side, in wait for unwary flies.

31. *Myiarchus lucaysiensis* Bryant. RUFOUS-TAILED FLYCATCHER.—Not as abundant as the preceding species, but quite often noted, especially in the northern part of the island. Seven specimens were collected, all of which were males.

[The series of seven specimens agrees with one of Bryant's original specimens in the Lawrence Collection at the American Museum of Natural History, and differs from a small series of *M. sagræ* in being much larger, with the bill narrower, and in lacking the strong yellow suffusion of the lower abdomen, crissum and axillaries, which in *M. lucaysiensis* are either nearly pure white or only faintly tinged with pale yellow. It is apparently a strongly marked form.—J. A. A.]

*32. *Tyrannus dominicensis* Gmel. GRAY KINGBIRD. 'FIGHTER.'—Quite common on the island, but most abundant near the coast. On May 31 we found a nest of this species in a small mangrove between tide marks. We had often seen similar nests before, but could not be certain what bird had made them. The nest was composed of small sticks rather compactly arranged. It was about nine inches in diameter and four or five inches in depth. In the centre was the cup, about three inches in diameter and two or three deep, very neatly lined with the fibre from some palm, probably from the spathe of the cocoanut palm. While examining the nest, the old birds flew from the shore and swooped over us, apparently much agitated. There were no eggs. On June 19 another nest was found in a mangrove on the west side of the island. This time I shot both birds and secured the nest and the one egg it contained. The latter was ovate in shape, 1.94 inches long, and .70 wide; white with a few small brownish and lavender spots and blotches, mostly near the larger end. It is stated that in Jamaica the nest of this bird "is seldom found in any other tree than that of the palm kind."* In Florida, however, it builds in the same situations as in the Bahamas. We found it a rather quiet bird, although it has been described as noisy. Once we saw it attack a Buzzard, and persistently drive it away.

33. *Chordeiles minor* Cab. CUBAN NIGHTHAWK.—Quite abundant; sometimes a dozen or more were seen flying about in the dusk. It is called 'Piramidig' by the natives, on account of its cry which to us, how-

*Baird, Brewer and Ridgway, N. A. Birds, Vol. II, p. 322.

ever, sounded more like 'Pir-ra-me-quick-quick.' Those procured were shot in the daytime, on the western side of Andros, on June 17. They were sitting motionless on the hot, dry plain, and did not fly until we were within a very few feet of them. Even when disturbed they would alight again very shortly, and crouch close to the ground as before.

*34. *Antrostomus carolinensis* (Gmel.). CHUCK-WILL'S-WIDOW.— Three specimens were taken, two of which were disturbed in the woods during the daytime, and the other shot at dusk. Upon examining the stomach of the first one I shot, I found, amid an indistinguishable mass of brownish matter, a small bone, about half an inch long, that looked like the leg of a small bird. The next one examined contained in its stomach the partially digested remains of an entire Hummingbird, enough of which was preserved to identify it beyond doubt as *Sporadinus ricordi*. "The remains of a small bird are said to have been found within the stomach of one of this species."* One collected on May 15 contained remains of beetles and winged ants in its stomach. The testes were much enlarged, being about half an inch in length, but I am not sure that the bird breeds on the island.

35. *Doricha evelynæ* (Bourc.). BAHAMA WOODSTAR. — Well distributed over both New Providence and Andros, and as common in the pines as in the coppet. They are both curious and pugnacious, for one day we watched one chase a *Dendroica discolor* off a tree, and follow it some little distance, and while walking through the woods one of these birds would often alight close by or hover over our heads, as if examining us, and they flew through the house a number of times. They seemed to alight on the branches quite as frequently as other birds, and we often watched them perch and preen their feathers. Their little silvery trill was a quite common note in the pines, and for a while we thought it the song of some bird in the distance until we caught sight of the tiny songster almost above our heads. They do not always confine their attention to flowers, for one day a *Doricha*, after fluttering about the basket of flowers in my hand, made a dart at a good-sized spider in a web close by, and to our surprise demolished it and was off again in a moment. Of the numbers that we saw at New Providence, none were adult males, and of those collected on Andros there was a large preponderance of females.

On one occasion we had the good fortune to see a male who was evidently displaying his charms. The female was perched on a branch of a low shrub and before her the male was performing. His wings were vibrating rapidly in the usual manner, and thus supported in the air he swung rapidly to and fro, at the same time rising and falling, a movement very difficult to describe but almost exactly like that of a ball suspended by an elastic thread that stretches and contracts as the ball swings back and forth. This exceedingly graceful movement was executed through a small arc for a few minutes, and then was suddenly changed. The male expanded his tail, showing the cinnamon of the webs, and then

* Baird, Brewer and Ridgway, N. A. Birds, Vol. II, p. 413.

threw himself rapidly and almost violently from side to side in an almost horizontal line. During this latter part of the display a rustling sound was produced, probably by the vibrations of the wings, and a few short sharp notes were uttered. He then darted suddenly at the female who all the while had been sitting apparently unconcerned, seemed almost to touch her with his bill, and then flew rapidly away. Shortly afterward the female left, flying in another direction. During all of the display the two birds were facing each other and not more than six or eight inches apart, and the gorget and tail of the male were exposed to their fullest advantage.

36. *Sporadinus ricordi* Gerv. RICORD'S HUMMINGBIRD. — This was abundant on Andros, where all my specimens were obtained, none being seen on New Providence. Curiously enough, in this species, there seemed to be a great preponderance of males, and out of the seven specimens collected, but one proved to be a female. It may safely be said that most of those we saw were males, as the females are quite different, being smaller and lacking the beautiful blue-green gorget. The ovaries of the bird collected May 16 were not enlarged. It is probable that both *Doricha evelynæ*, and *Sporadinus ricordi* breed on the island; that one of them certainly does was evidenced by a nest that I was shown. It was lined with cotton, and was evidently the nest of a Hummingbird.

37. *Crotophaga ani* Linn. ANI. RAIN CROW. — Frequently seen on both New Providence and Andros, and always in small flocks of three or more. They were not as tame as most of the land birds, being on the contrary quite shy, and it was a difficult matter to get very close to them, as one of the flock was almost certain to espy you, and to notify the others with his loud warning 'wee-cep,' a note in which the second syllable was much higher than the first, and more prolonged. On one occasion while walking through the woods during a rain, we noticed what looked like a square black board suspended to a pine some distance from the path. On investigation the black object was discovered to be seven *Crotophagas*, sitting in a row on a small dead branch, and crowded as closely together as possible. They were not asleep, however, for when I had approached within thirty or forty feet, a warning note was heard, then another and another, as they one by one took flight.

38. *Saurothera bahamensis* Bryant. GREAT BAHAMA CUCKOO. — The 'Rain Crow,' as the natives call this bird, was said to be abundant, but we got but one mature specimen and two young ones. Dr. Bryant states that they were quite common on New Providence in 1859. They fly about with a weak, wavy motion, and the people told us that they could catch them after a short chase, as they soon grew tired. Our specimens were obtained on the following dates, May 20, May 26, June 13; all on the eastern side of Andros. The one taken on May 20 was a mature female, and the ovaries were enlarged, some of the ova being over one fourth of an inch in diameter. In the stomach were grasshoppers and a small lizard. The stomachs of the others contained the remains of insects. Their bills were soiled, probably from investigating the leaves of the

epiphytic Tillandsias, as these ants found in their stomachs seemed to be of the same species as those inhabiting these plants. The description given by Cory* agrees with the two young specimens, but the adult has a black band near the end of the tail-feathers, which are tipped with dirty white, except the two middle ones. This agrees with the description given by Bryant.†

39. *Coccyzus minor maynardi* (Ridgw.). MAYNARD'S CUCKOO.—This bird, like the last species, was said to be common, but we succeeded in getting but four specimens, and during our stay saw about as many more. Their note was quite frequently heard, however, and usually from the mangroves or near by. The stomachs contained the remains of small insects and grasshoppers. On June 28 the testes were much enlarged (one half inch long).

* 40. *Ceryle alcyon* (Linn.).—BELTED KINGFISHER. Not uncommon on either New Providence or Andros, but no specimen was obtained. One was noted on the west side on April 23, and another on the east side two days later, although Dr. Bryant states that he saw none after April 1. We thought that we saw one May 26, but were not near enough in this instance to be certain.

41. *Dryobates villosus maynardi* Ridgw. BAHAMAN Hairy WOODPECKER.—All our specimens were taken on Andros, where the bird was abundant, especially about the clearings.

* 42. *Sphyrapicus varius* (Linn.). YELLOW-BELLIED SAPSUCKER.—A single specimen, a female, was shot near Nassau about February 5.

43. *Strix pratincola* Bonap. AMERICAN BARN OWL.—Although but few of these birds were seen, I judge from what the people said that they are common. One that I shot at Nicol's Town had its home under an overhanging ledge on the precipitous side of a large hole about one hundred feet in diameter, known as the 'ocean hole.' Here in a deep recess, on March 25, we found two young ones not yet able to fly; and near by were the remains of the common rat of the island (*Mus rattus*). As is usual with this species, there was no nest, the birds resting on the ground. Around them for some distance the surface was covered with the rejected food balls, composed of the bones and hair of the rodent above mentioned, and as no other bones were noticed, it is probable that the Owl's principal article of diet was rat.

44. *Speotyto cunicularia dominicensis* Cory. BURROWING OWL.—The specimen doubtfully referred to this subspecies was shot at Nassau in February. Another, presumably of the same subspecies, was seen on the southern part of Andros in June, flying about the low shrubs near the shore, but we were not fortunate enough to get it.

[A single specimen is referred to this form, which it much more resembles than it does the Florida form, being much darker than the latter. —J. A. A.]

* Birds of West Indies, p. 159.

† Proceedings Boston Society Nat. Hist., Vol. IX, p. 280.

* 45. *Falco columbarius* Linn. PIGEON HAWK.—A single specimen, a male, was shot at Mastic Point on Andros on May 2. The bird was rare. A larger Hawk also was seen, but no specimens were obtained.

46. *Cathartes aura* (Linn.).—TURKEY BUZZARD. 'CROW.'—Very common on Andros, but more were seen on New Providence.

47. *Columba leucocephala* Linn. WHITE-CROWNED PIGEON.—Very abundant during the spring and summer. In the evening we often watched them flying from Andros in the direction of New Providence. The people said that they were going to Green Bay, a distance of fifty miles. A female shot on June 28 was almost ready to lay.

48. *Columbigallina passerina* (Linn.).—Called 'Ground Dove' and 'Tobacco Dove' by the natives. Exceedingly common both on Andros and New Providence. They generally fly about in small flocks of three to six, and are very tame.

49. *Zenaida zenaida* (Bonap.). ZENAIDA DOVE.—Not as abundant as the White-crowned Pigeon, but not uncommon in the coppet. They were shy, and were heard much oftener than seen.

50. *Charadrius squatarola* (Linn.).—A pair of Black-bellied Plovers was shot on the shore near Red Bays, Andros, on April 14.

51. *Ægialitis vocifera* (Linn.).—The Killdeer was first seen near Fresh Creek on the first of June, and on the 7th two were shot. They both proved to be males, with the testes enlarged to about .5 inch in diameter. The species was not abundant, and but few were afterward seen.

52. *Ægialitis wilsonia* (Ord). WILSON'S PLOVER.—Abundant and very tame. It was found on almost all the sandy beaches, where it would sometimes run along just ahead of us for nearly half a mile, appearing quite to forget that it could get out of our way by flying. This species is known to breed in the Bahamas.*

53. *Hæmatopus palliatus* (Temm.). AMERICAN OYSTERCATCHER. 'SEA-PIE.'—One of these birds was obtained near Red Bay on April 15. It was feeding on the extensive sand flats at low tide. Later, others were occasionally seen in similar places. It is said to breed in the Bahamas.†

54. *Himantopus mexicanus* (Müll.). BLACK-NECKED STILT.—A flock of these birds was seen in one of the lakes on the west side of Andros on April 21, and a pair were secured. We afterwards found them occasionally in the marshes. On June 17 we saw quite a number of these birds in the swash near Wide Opening. Our man said that this was the kind of place in which they bred, and later we found a nest. It was simply a slight depression in the ground, and contained four ovate eggs of an olive green color, blotched with brown, measuring $1\frac{1}{4}$ to $1\frac{1}{2}$ inches by $1\frac{1}{4}$.

55. *Symphemia semipalmata* (Gmel.). WILLET.—Commonly known as 'Tell-Bill-Willy.' Very abundant in all the creeks and swashes. The ovaries of those shot on May 31 were much enlarged.

* Cory, Birds of Bahamas, p. 14.

† Bryant, Proc. Bost. Soc. Nat. Hist., VII, p. 121.

*56. *Actitis macularia* (Linn.). SPOTTED SANDPIPER. 'SANDBIRD.'—One specimen, a female, was shot on the west side of the island. April 21, and was the only one seen during our trip. As Cory obtained only three specimens in 1879, it is doubtful if it is a resident.

57. *Rallus coryi* Maynard. BAHAMAN RAIL.—A single specimen from Couch Sound, Andros, April 15. It was shot and skinned by Mr. Alexander Keith, a Scotch gentleman, to whom the writer takes pleasure in acknowledging his indebtedness for this and many other favors, while on Andros. This bird was known as the Marsh Hen, and is said by the people to be common, but we never met with it again. On May 28 a woman brought us three eggs that she said were those of a Marsh Hen. They are ovate to elongate-ovate in shape, and are nearly cream color with chocolate spots and blotches irregularly distributed over the entire surface but much more numerous at the larger end. Mingled with these chocolate spots are others of a lavender gray. The eggs are of the following dimensions: 1.60 X 1.30; 1.70 X 1.22; 1.70 X 1.20 inches.

[A single specimen in fine (unworn) plumage is provisionally referred to *Rallus coryi*. It is, however, about the size of ordinary *R. crepitans*, from which it differs in the gray edgings of the plumage being much broader than in even extreme examples of that form, resulting in a generally grayer effect.—J. A. A.]

58. *Ardea herodias* Linn. GREAT BLUE HERON. 'ARSNICKER.'—Not uncommon.

59. *Ardea rufescens* Gmel. REDDISH EGRET.—Abundant in the swashes. The white phase of this bird was also common; many were seen, and three specimens were collected.

60. *Ardea tricolor ruficollis* (Gosse). LOUISIANA HERON. 'SWITCHING-NECK.'—Two pairs were obtained at Mastic Point in May. They were breeding in a large mangrove, about a mile and a half from the shore. These birds agree with Ridgway's description (Manual N. A. Birds, p. 131) except that the upper part of the throat is not white but rufous mixed with white. These also agree with Cory's description of *A. cyanostris*. But a specimen collected on the western side of Andros answers to Cory's description of *A. leucogastra* var. *leucoprymna*, and differs from the above specimens in the following points. The forehead and crown are much darker, being quite black; the throat has more rufous, and the neck is darker. The nest of the Mastic Point birds was composed of small mangrove sticks, laid so as to make a circular structure nine inches in diameter and three or four deep. There was a slight depression in the top, in which were placed a few sticks, parallel to each other, and on these were four eggs. The latter vary in shape; some being ovate, while others are almost equally pointed at both ends. They are nearly malachite green* in color, but with a slightly bluer tinge. The measurements are as follows: 1.71-1.84 X 1.29-1.34 inches.

* 61. *Ardea cærulea* Linn. LITTLE BLUE HERON. — One specimen,

* Ridgway, Nomenclature of Colors.

shot at Stafford Creek May 5. No more were seen, which seems curious, as Dr. Bryant regarded this as the most common species of Heron;* and Cory states that it was abundant during the winter, but no adults were taken by him.† My remarks, however, apply only to Andros, and the bird might be common in other localities.

62. *Ardea bahamensis Brewster*. BAHAMA GREEN HERON.—Locally known by the expressive name of 'Poor Joe.' We found it quite abundant in the creeks and swashes, and at Fresh Creek collected what is very probably the young of this species, hitherto undescribed. The top of the head is clove brown with a slightly greenish gloss, streaked with cinnamon rufous. The rest of the head, front of the neck, and the breast, are white striped and mottled with sepia and bistre. The back and the remainder of the neck are olive, having the feathers edged with cinnamon rufous. The tail is similar to the adult. Lower parts are gray, the feathers being edged with white; and the scapulars and wings are clove brown, the coverts having an elliptical mark of wood brown and being edged with cinnamon rufous; the rest of the wing feathers having a deltoid mark of white at the end. The bill is ochre yellow, darker above, and shading into black near the end of the upper mandible. Legs olive.

*62. *Nycticorax nycticorax nævius (Bodd.)*. 'GOLDEN.'—The Black-crowned Night Heron is new to the Bahamas, and is said by the people to be abundant, although we did not see very many individuals. Two were secured at Conch Sound, March 30.

*64. *Nycticorax violaceus (Linn.)*. YELLOW-CROWNED NIGHT HERON.—About as abundant as the last species. Both the above species of *Nycticorax* are locally known as 'Goldens,' pronounced 'gaulings.'

65. *Phœnicopterus ruber Linn.*—A few Flamingoes were seen on the western coast of Andros in April; but later, in June, when the breeding season had commenced, we found them very abundant. A pair were shot on June 18, and they were then ready to lay. We were told that one of their breeding places was near Big Cabbage Creek, and a day was spent in an unsuccessful attempt to find their nests. They were described to us, however, by reliable people, who also stated that the birds sat upon their nests 'like any other bird,' and not with their legs hanging down on either side. The birds are exceedingly shy, and in the open swashes it is difficult to get within shot; for while stealing warily toward them, you are very apt to hear a warning 'gong, gong,' and off flies the entire flock, a streak of flame against the sky. The Flamingoes, when feeding, push their head into the mud under water; and this fact is taken advantage of to secure them. While the head is under water the negro walks rapidly forward, taking about ten steps and then stopping. By that time the bird will probably lift its head and look around. The negro stands motionless and screens his face with a branch of a tree until the Flamingo, apparently satisfied that the new object is inanimate, quietly resumes his

* Proc. Bost. Soc. Nat. Hist., VII, p. 120.

† Birds of the Bahamas, p. 171.

feeding, and the negro advances as before. I was assured by intelligent men that in this way they had sometimes captured the birds alive with their hands. That the bird feeds in the manner described above is well shown by its mouth, which is peculiarly adapted to sifting from the mud any mollusks or crustaceans that might serve as food, and the gape of the bill when opened to its fullest extent is only about half an inch. We were also told that a screen is sometimes built of palm leaves, and behind this the native can easily advance within shot of the flocks. A large number of young birds are yearly destroyed by the people for food. We ate the bodies of those we obtained and found the flavor most delicious. We had for a long time been living practically upon flour and hominy, and this may have made the Flamingo seem better than it really was; nevertheless I think it would bear comparison with any of the much sought after game birds. The stomachs of the pair I obtained contained no fish, but many small shells and much mud.

66. *Dendrocygna arborea* (Linn.). TREE DUCK.—A flock of Ducks was seen in a lake on the west side on April 21, but we could obtain no specimens. A negro who was with us said that they were 'Whistling Ducks' and, as Cory * states that this species was quite abundant on Andros, the negro was probably right. I was told that earlier in the year the Ducks were very numerous on the swashes. The ground about the lake mentioned was pitted with shallow holes about two to four inches in diameter which our man said had been made by the Ducks while feeding, when the place had been covered with water. I also saw a smaller Duck near Wide Opening on June 17. In answer to my questions, I was told that it was a 'Summer Duck'.

* 67. *Fregata aquila* (Linn.). MAN-O'-WAR-BIRD.—A number of these birds had their roosting place in the large mangrove near Mastic Point, already spoken of in connection with the Red-winged Blackbirds. We were told that formerly they used to breed there, but that of late years they had gone farther from the settlement.

* 68. *Pelecanus fuscus* Linn. BROWN PELICAN.—A few seen, and one, a young bird, obtained.

* 69. *Phalacrocorax dilophus floridanus* (Aud.). FLORIDA CORMORANT.—Cory in his 'Birds of the Bahamas' states that this is an abundant species, but in his 'West Indian Birds' says it is accidental in the Bahamas. We often saw it, and on June 16 while sailing through the Northern Bight, found them breeding on a small island known as Cormorant Cay. Here were old and young birds, some not able to leave the nest, but the majority able to walk. Those still in the nest were covered with a soft sooty down, and their gular sacks were pale yellowish white, darker near the bill. The nests were about eighteen inches in diameter, and about one foot in height, roughly constructed of sticks.

* 70. *Anous stolidus* (Linn.). NODDY.—A flock of these birds was seen near Fresh Creek, on June 6. They were occasionally seen afterward.

* Birds of Bahamas, p. 183.

* 71. *Larus atricilla* Linn. LAUGHING GULL.—Abundant. First noted early in April.

* 72. *Sterna maxima* Bodd. ROYAL TERN.—One specimen shot April 14 on Long Sound on the northern coast of Andros. A few more were seen, but the bird was not common.

* 73. *Sterna fuliginosa* Gmel. SOOTY TERN.—Since our return a specimen of this bird has been kindly sent to us by Mr. Alex. Keith of Andros. We saw none of this species while on the island.

74. *Sterna anæthetus* Scop. BRIDLED TERN.—Abundant on a small bay near Fresh Creek, where they breed. The people call this and the preceding species 'egg birds,' and during the season collect and eat their eggs. They were not breeding when we were at Fresh Creek early in June, but they were almost ready to breed.

* 75. *Sterna antillarum*, Less. LEAST TERN.—Abundant off Fresh Creek on a small cay near the larger one occupied by the Bridled Tern; neither, however, seemed to trespass on the ground of the other.

EIGHTH CONGRESS OF THE AMERICAN ORNITHOLOGISTS' UNION.

THE EIGHTH CONGRESS of the American Ornithologists' Union was held in the lecture hall of the United States National Museum, Washington, D. C., Nov. 18-20, 1890, the President, Dr. J. A. Allen, in the chair. There were present twenty Active Members and eighteen Associate Members.

The Secretary's report gave the membership of the Union at the opening of the present congress as 465, constituted as follows: Active Members, 50; Honorary Members, 21; Corresponding Members, 72; Associate Members, 322;—the total increase for the year being 65.

During the year four Honorary Members and two Associate Members have died, and one Associate Member has resigned. The Honorary Members were Dr. Ladislaus Taczanowski of Warsaw, Russia; John Henry Gurney of Northrepps, England; William Kitchen Parker of London, England; and Dr. F. von Krauss of Stuttgart, Württemberg. The Associates were Henry D. Minot, killed in a railroad accident near New Florence, Penn.; and Gideon Mabbett of Rodney, Miss. The resignation was that of Miss Ellen King.

Two Honorary Members were elected, viz., Graf Hans von

Berlepsch of Münden, Germany, and George N. Lawrence of New York; and one Corresponding Member, Dr. Paul Leverkühn of Munich, Bavaria; and eighty-four new members were added to the list of Associates.

The finances of the Union, as exhibited by the Treasurer's report, are in good condition, there being no outstanding liabilities and a balance in the treasury.

At the call for election of Officers, Dr. J. A. Allen, having served for seven years as President, declined to be a candidate for the office, and Dr. Coues also withdrew his name for re-election as Vice-President. The officers elected were D. G. Elliot, President; Robert Ridgway and William Brewster, Vice-Presidents; John H. Sage, Secretary; William Dutcher, Treasurer. The vacancies in the Council occasioned by the above election and by Mr. Lawrence having been made an Honorary Member, were filled by the selection of Dr. J. A. Allen, Dr. Elliott Coues, and Col. N. S. Goss.

On the call for reports of Standing Committees, Dr. Elliott Coues, chairman of the Committee on Avian Anatomy, read his report, and requested that the Committee be continued, and that Mr. F. A. Lucas be made an additional member of it, which was duly acceded to by the Union.

Dr. C. Hart Merriam, Chairman of the Committee on Migration and Geographical Distribution of North American Birds, stated that the work of the Committee had been transferred to the Department of Agriculture and requested that the Committee be discharged.

Mr. George B. Sennett, Chairman of the Committee on Protection of North American Birds, stated that no additional legislation had been made, but a general feeling was manifested in the different States to protect song birds, and desired to report progress. No formal report was received from the Audubon Monument Committee, on account of the absence of the Chairman, Dr. G. B. Grinnell, and the Committee was continued.

The Amendments to the By-Laws proposed at the session of the seventh congress were then considered; part were adopted, part were rejected, and others amended and referred to the next congress for ratification.*

*See under the department of 'Notes and News' in the present number of 'The Auk.'

Dr. Arthur P. Chadbourne was appointed a delegate to represent the American Ornithologists' Union at the coming International Ornithological Congress to be held at Budapest, in May, 1891.

The remaining time of the session was devoted mainly to the reading of scientific papers, of which the following is a list.

1. The American Ornithologists' Union — A Seven Years' Retrospect. Dr. J. A. Allen.
2. Seed-planting by Birds. Walter B. Barrows.
3. A Study of Bird Waves in the Delaware Valley during the Spring Migration of 1890. Witmer Stone.
4. Our Present Knowledge of the Neotropical Avifauna. Frank M. Chapman.
5. The Present Status of the Ivory-billed Woodpecker. E. M. Hiebrouck.
6. Phalaropes at Swampscott, Mass. W. A. Jeffries.
7. Spring Migration of the Red Phalarope. H. G. White.
8. Some Observations on the Breeding of *Dendroica vigorsii* at Raleigh, N. C. C. S. Brimley.
9. The Trans-Appalachian Movement of Birds from the Interior to the South Atlantic States, viewed chiefly from the Standpoint of Chester, S. C. Leverett M. Loomis.
10. A Further Review of the Avian Fauna of Chester County, S. C. Leverett M. Loomis.
11. The Birds of Andros Island, Bahamas. Dr. John I. Northrop.
12. Remarks on a Few Species of Andros Island Birds. Dr. J. A. Allen.
13. Observations upon the Classification of the United States Accipitres, based upon a Study of their Osteology. Dr. R. W. Shufeldt.
14. Some Notes concerning the Evening Grosbeak. Amos W. Butler.
15. Instinct, Intuition and Intelligence. C. F. Amery.
16. The Habits of the American Golden Plover in Massachusetts. Geo. H. Mackay.
17. Some Bird Skeletons from Guadalupe Island. Frederic A. Lucas.
18. On the Tongue of Hummingbirds. Frederic A. Lucas.
19. An Experimental Trial of a New Method for the Study of Bird Migration. H. G. White.
20. Correction to Revised Catalogue of the Birds of Kansas. N. S. Goss.
21. Second Occurrence of the White-faced Glossy Ibis (*Plegadis guarauna*) in Kansas. N. S. Goss.
22. Remarks on the Primary Faunal Divisions of North America. Dr. C. Hart Merriam.
24. Exhibition of a New Owl from Idaho. Dr. C. Hart Merriam.

One of the interesting features of the meeting was the exhibition of pictures, thrown on a screen, of living birds taken in their haunts, and of nests in situ, from photographs made by Mr. Henry M. Spelman of Cambridge, Mass., and explained by Mr. William Brewster, who spoke of the great difficulty of obtaining successful results in this class of work.

Resolutions were adopted extending the thanks of the Union to the Board of Regents of the Smithsonian Institution for the use of the lecture hall of the National Museum and for other courtesies tendered to the Union during the session of the Eighth Congress; to the Cosmos Club of Washington for courtesies extended to the visiting members; to the Washington members for their generous hospitalities to the visiting members; and to the retiring President, Dr. Allen, for the efficient and impartial manner in which he had presided over the Union during the seven years since its foundation.

It was voted to hold the next Congress at the American Museum of Natural History in New York City, on the third Tuesday in November, 1891.

THIRD SUPPLEMENT TO THE AMERICAN ORNITHOLOGISTS' UNION CHECK-LIST OF NORTH AMERICAN BIRDS.

BY ORDER of the Council of the American Ornithologists' Union the Committee on Publication has prepared the following report on the species, subspecies, and changes of nomenclature proposed during the year ending November, 1890, to be published as the Third Supplement to the American Ornithologists' Union Check-List.

In accordance with the action of the Council, the Committee in cases of the rejection of proposed changes or additions, gives its reasons for considering them inadmissible.

A few cases are necessarily deferred from lack of the requisite data to enable the Committee to reach satisfactory decisions.

The Council having passed a standing order for the preparation

of an annual Supplement to the Check-List, the Committee, in behalf of its successors, begs to call the attention of describers of species and subspecies to the fact that without their coöperation its work will be in large part futile, since, without having the types, or other authentic material representing the new forms before it, the Committee cannot take the responsibility of giving an opinion upon the claims of such forms to recognition. The Committee therefore respectfully requests that describers of new forms of North American birds will kindly transmit to the Committee, for use at its annual session, such types or other material as will facilitate its work.

The present Supplement consists of I, *Additions*; II, *Eliminations*; III, *Changes of Nomenclature*; IV, *Forms considered as not entitled to Recognition*; V, *Proposed changes of Nomenclature rejected*; VI, *Action deferred from lack of material*; VII, *Species entered in the Check-List as Accidental, but now considered as of regular occurrence*.

The number at the left of the scientific name facilitates collation with the Check-List. The interpolated species and subspecies are numbered in accordance with the provisions made therefor in the Code of Nomenclature. (See page 14, last paragraph.)

Committee
on
Publication.

{ D. G. ELLIOT, *Chairman*.
JOHN H. SAGE, *Secretary*.
J. A. ALLEN.
WILLIAM BREWSTER.
ELLIOTT COUES.
H. W. HENSHAW.
ROBERT RIDGWAY.

I. ADDITIONS.

256 a. *Totanus solitarius cinnamomeus* BREWSTER.
Western Solitary Sandpiper.

Totanus solitarius cinnamomeus BREWSTER, Auk, VII,
Oct. 1890, 377.

[B 541, *part*, C 435, *part*, R 550, *part*, C 637, *part*.]

HAB. Pacific Coast region, eastward to the Plains.

474 h. *Otocoris alpestris adusta* DWIGHT.
Scorched Horned Lark.

Otocoris alpestris adusta DWIGHT, Auk, VII, April, 1890, 148.

[B—, C—, R—, C—.]

HAB. Southern Arizona and New Mexico, Western Texas, and southward into Mexico.

474 *i.* *Otocoris alpestris merrilli* DWIGHT.

Dusky Horned Lark.

Otocoris alpestris merrilli DWIGHT, Auk, VII, April, 1890, 153.

[B—, C—, R—, C—.]

HAB. Eastern Oregon, Washington, and British Columbia, between the Cascade and Rocky Mountains; southward in winter into Nevada and California.

474 *j.* *Otocoris alpestris pallida* TOWNSEND.

Sonoran Horned Lark.

Otocoris alpestris pallida TOWNSEND, Proc. U. S. Nat. Mus., XIII, 1890, 138.

[B—, C—, R—, C—.]

HAB. Lower California and Sonora.

514 *a.* *Coccothraustes vespertinus montanus* (RIDGW.).

Western Evening Grosbeak.

Hesperiphona vespertina var. *montana* RIDGW. in Hist. N. Am. Bds., Land Bds., I, 1874, 449.

Coccothraustes vespertina montana MEARNs, Auk, VII, July, 1890, 246.

[B 303, *part*, C 136, *part*, R 165, *part*, C 189, *part*.]

HAB. Western North America, from the Pacific Coast eastward to the Rocky Mountains; southward over table-land of Mexico.

567 *b.* *Junco hyemalis shufeldti* COALE.

Shufeldt's Junco.

Junco hyemalis shufeldti COALE, Auk, IV, Oct. 1887, 330.

(Cf. CHAPMAN, Bull. Am. Mus. Nat. Hist., III, No. 1, Oct. 1890, 146.)

[B 352, *part*, C 175, *part*, R 218, *part*, C 263, *part*.]

HAB. Western United States, from the Rocky Mountains to the Sierra Nevada and Cascade Range; in winter eastward to Texas, casually to Illinois, Maryland, etc.

568.1. ***Junco ridgwayi* MEARNs.**

Ridgway's Junco.

Junco ridgwayi MEARNs. Auk, VII, July, 1890, 243.

[B—, C—, R—, C—.]

HAB. Wyoming, Arizona, and New Mexico.

574 b. ***Amphispiza belli cinerea* TOWNSEND.**

Gray Sage Sparrow.

Amphispiza belli cinerea TOWNSEND, Pr. U. S. Nat. Mus. XIII, 1890, 136.

[B—, C—, R—, C—.]

HAB. Lower California.

582 h. ***Melospiza fasciata graminea* TOWNSEND.**

Santa Barbara Song Sparrow.

Melospiza fasciata graminea TOWNSEND, Pr. U. S. Nat. Mus., XIII, 1890, 139.

[B—, C—, R—, C—.]

HAB. Santa Barbara Island, California.

582 i. ***Melospiza fasciata clementæ* TOWNSEND.**

San Clemente Song Sparrow.

Melospiza fasciata clementæ TOWNSEND, Pr. U. S. Nat. Mus., XIII, 1890, 139.

[B—, C—, R—, C—.]

HAB. San Clemente and Santa Rosa Islands, California.

[612.1] ***Petrochelidon fulva* (VIEILL.).**

Cuban Cliff Swallow.

Hirundo fulva VIEILL. Ois. Am. Sept. I, 1807, 62, pl. 30.

Petrochelidon fulva CAB. Mus. Hein. I, 1850, 47.

[B—, C—, R—, C—.]

HAB. Greater Antilles and coast of Central America. Accidental in the Dry Tortugas, Florida. (Cf. SCOTT, Auk, VII, July, 1890, 264.)

GENUS CALLICHELIDON BRYANT.

Callichelidon BRYANT, MS., BAIRD, Rev. Am. Bds. I, 1865, 303. Type, *Hirundo cyaneoviridis* BRYANT.

[615.1] **Callichelidon cyaneoviridis** BRYANT.

Bahaman Swallow.

Hirundo cyaneoviridis BRYANT, Pr. Boston Soc. Nat. Hist., VII, 1859, 111.

Callichelidon cyaneoviridis BRYANT, MS., BAIRD, Rev. Am. Birds, I, 1865, 303.

[B—, C—, R—, C—.]

HAB. Bahamas. Accidental in the Dry Tortugas, Florida. (Cf. SCOTT, Auk, VII, July, 1890, 265.)

646 b. **Helminthophila celata sordida** TOWNSEND.

Dusky Warbler.

Helminthophila celata sordida TOWNSEND, Pr. U. S. Nat. Mus. XIII, 1890, 139.

[B—, C—, R—, C—.]

HAB. San Clemente, Santa Cruz, and Santa Rosa Islands, California.

727 b. **Sitta carolinensis atkinsi** SCOTT.

Florida White-breasted Nuthatch.

Sitta carolinensis atkinsi SCOTT, Auk, VII, April, 1890, 118.

[B 277, *part*, C 38, *part*, R 51, *part*, C 57, *part*.]

HAB. Florida.

II. ELIMINATIONS.

- 435.
- Trochilus heloisa**
- (LESS. & DELATT.).

Heloise's Hummingbird.

This species was introduced into the North American fauna on the basis of an immature specimen of *Trochilus calliope* Gould, wrongly identified as *T. heloisa*. (Cf. RIDGWAY, Auk, VIII, Jan. 1891, 115.)

III. CHANGES OF NOMENCLATURE.

- 338.
- Buteo harlani**
- (AUD.). This becomes

- 337
- d.*
- Buteo borealis harlani**
- (AUD.).

(Cf. RIDGWAY, Auk, VII, April, 1890, p. 205.)

- [361.]
- Falco sparveriioides**
- VIG. This becomes

Falco dominicensis GM.*Falco dominicensis* GM. Syst. Nat. I, 1788, 288.

(Cf. RIDGWAY, Auk, VIII, Jan. 1891, 113.)

4. **Xema (Creagrus) furcata** (NEB.). (Hypothetical List, p. 350.) This becomes **Creagrus furcatus** (NEB.), *Creagrus* being raised to generic rank. (Cf. RIDGWAY, Pr. U. S. Nat. Mus. XII, 1889, 117.) Hence:

GENUS **CREAGRUS** BON.

Creagrus BON. Naumannia, 1854, 211. Type, *Larus furcatus* NEBOUX.

- 4.
- Creagrus furcatus**
- (NEB.).

Larus furcatus NEB. Voy. 'Venus,' Atlas, pl. 10 (1846).*Creagrus furcatus* BON. Naumannia, 1854, 213.

IV. FORMS CONSIDERED AS NOT ENTITLED TO RECOGNITION.

Melanerpes formicivorus aculeatus MEARNs, Auk, VII, July, 1890, 249.

Rejected on the ground that the alleged characters are too slight and inconstant.

Otocoris alpestris insularis TOWNSEND, Pr. U. S. Nat. Mus. XIII, 1890, 140.

Rejected on the ground of the insufficiency of the alleged characters.

V. PROPOSED CHANGES OF NOMENCLATURE REJECTED.

407. *Melanerpes formicivorus bairdi* RIDGW., vs. *M. f. melanopogon* TEMM. (Cf. HARGITT, Cat. Bds. Brit. Mus. XVIII, 1890, 151.)

Melanopogon was considered a synonym of *formicivorus* proper.

460. *Contopus pertinax* CAB., vs. *Contopus musicus* (SWAIN.). (Cf. SALVIN and GODMAN, Biol. Centr.-Am. Aves, II, 1889, 81.)

Tyrannula musica SWAIN. was considered indeterminable.

VI. ACTION DEFERRED FROM LACK OF MATERIAL.

Final decision on the following was deferred, owing to absence of material necessary to enable the Committee to pass judgment upon the questions involved.

216 a. *Porzana jamaicensis coturniculus*, BAIRD, vs. *Porzana coturniculus*. (Cf. RIDGWAY, Pr. U.S. Nat. Mus. XIII, 1890, 309-311)

Melcagris gallopavo osceola SCOTT, Auk, VII, Oct. 1890, 376.

Ictinia plumbea (GM.).— Cf. CAHOON, O. & O. XV, March, 1890, 35.

Spinus tristis pallidus MEARNs, Auk, VII, July, 1890, 244.

Vireo vicinior californicus STEPHENS, Auk, VII, April, 1890, 159.

VII. SPECIES ENTERED IN THE CHECK-LIST AS ACCIDENTAL, BUT NOW CONSIDERED AS OF REGULAR OCCURRENCE.

[344.] **Buteo brachyurus** VIEILL.—Brackets to be removed, the bird being now known to be a resident species in Florida.

[623.] **Vireo altiloquus barbatulus** (CAB.).—Brackets to be removed, the species being now known as a regular visitor to the Florida Keys, where it breeds.

[737.] **Parus meridionalis** SCL. — Brackets to be removed, its breeding range being now known to include portions of southern Arizona.

RECENT LITERATURE.

Sharpe's Catalogue of the Sturniformes.*—The present volume completes the descriptions of the Acromyodian Passeres. It treats of the Wood-Swallows (Artamidæ), the Starlings (Sturnidæ), the Weaver-birds (Ploceidæ), and the Larks (Alaudidæ), and also the Brush-birds (Atrichiidæ), and Lyre-birds (Menuridæ). These are all Old World groups, the Larks only being represented in the New World by the single genus *Otocoris*. The number of species and subspecies treated is 601, represented by 11,699 specimens, only 58 species, or about ten per cent. of the whole, being unrepresented in the British Museum collection.

Respecting the classification, which brings these families into such unusual juxtaposition, Mr. Sharpe observes: "The classification adopted in the third volume of the present work for the arrangement of the Passeriformes was principally that of Mr. Wallace (*Ibis*, 1874, p. 409), with certain modifications. During the sixteen years which have elapsed since Mr. Wallace propounded his idea of an arrangement of the Passeres, we have learned that the classification adopted in 1877 is somewhat arti-

*Catalogue of the | Passeriformes, | or | Perching Birds, | in the | Collection | of the | British Museum. | — | Sturniformes, | containing the Families | Artamidæ, Sturnidæ, Ploceidæ, Alaudidæ. | Also the families | Atrichiidæ and Menuridæ. | By | R. Bowdler Sharpe. | London: | Printed by order of the Trustees. | Sold by | Longmans & Co., 39 Paternoster Row; | B. Quaritch, 15 Piccadilly; Asher & Co., 13 Bedford Street, Covent Garden; | Kegan Paul, Trench, Trübner & Co., 57 Ludgate Hill; | and at the | British Museum (Natural History), Cromwell Road, S. W. | 1890.—8vo, pp xvi+702, pl. xv. = Catalogue of the Birds in the British Museum, Vol. XIII.

ficial; the characters which were then thought to be of great importance now seem of little worth. Of the three Sections which I have adopted from Mr. Wallace, the one treated of in the present volume seems to be the most unnatural. The Starlings are divorced from the Corvidæ, to which they are undoubtedly allied; the Artamidæ may be a Sturnine family, but of that I am not yet assured; the Alaudidæ find themselves separated from the Motacillidæ, and the Ploceidæ from the Fringillidæ and Icteridæ."

The volume is of course an invaluable hand-book of the groups treated. The method of treatment is similar to that of the other volumes of the series by the same author. 'Subspecies' and 'races' are freely recognized, but in a way to avoid 'trinomials' with, in some cases, the singular result of a form described, say in 1800, being ranked as a subspecies of another form described half a century or more later—an anachronism in nomenclature not by any means new in this series of volumes.

In treating the genus *Otocoris* (or '*Otocorys*,' as Mr. Sharpe naturally prefers to write it) he says of the American forms: "Anything more puzzling than these races of Horned Larks it has never been my lot to describe. The differences between *O. alpestris* and *O. rubea* are as well marked as could be wished, but between these two extreme forms are interposed a number of races which seem absolutely to connect them [!], and both of these American authors [Messrs. Henshaw and Ridgway] admit that these connecting links actually exist [!]. To write all of the races under the heading *O. alpestris* would be to obscure the existence of several highly interesting geographical forms, and I have therefore thought it best to recognize the races determined by Mr. Henshaw and confirmed by Mr. Ridgway, with certain notes of my own upon the series now lying before me." (These include the specimens in the Henshaw collection.) Mr. Dwight's paper on the same group was published too late for consideration in the body of the volume, but it is mentioned in the 'Addenda,' and the three additional races proposed by Mr. Dwight after an examination of more than six times the material (2012 specimens) studied by Mr. Henshaw, are accepted, but not "*more Americano*," under trinomials, but of course after the stereotyped method of Mr. Sharpe.

After stating that he quite agrees with Mr. Henshaw "that the large Horned Lark of Europe cannot be separated from that of North America," his study of the British Museum series of American Horned Larks appears to have led him to separate the American forms into two specific groups, as follows: 1. *O. leucolema*, with 'subsp.' *α. praticola*, and *β. arenicola*; 2. *O. alpestris*, with 'subsp.' *α. chrysolema*, *β. peregrina* (U. S. Colombia), *γ. rubea*, *δ. giraudi*, *ε. strigata*. On just what grounds this division is made Mr. Sharpe fails to state; to American eyes they are certainly inscrutable: for a more arbitrary arrangement would be hard to devise. Geographically his subspecies of *alpestris* are separated from *alpestris* proper by the intervention of his whole *leucolema* group, his first subspecies of *alpestris* (*alpestris* is limited in the breeding season to Labrador and the Hudson Bay region) being *chrysolema*.

of Southern California and Mexico. On either geographical or other grounds the case is scarcely better for the other subspecies of his *alpestris* group.

In the present volume, as in previous volumes of this series, Mr. Sharpe displays his usual independence of the strict law of priority, the case of *Ploceus baya* (p. 488) being an illustration in point, where an Indian Weaver-bird was named by Linnæus *Loxia philippina* and the species known for a long period as *Ploceus philippinus*. Later (1844) it was called *Ploceus baya* by Blyth, this latter name being also in common use for a long period for an allied species, to which of late it has been restricted. But as no Weaver-bird has ever come from the Philippines, the name *philippinus* is discarded for *baya*, and an older name than *baya* is properly revived for the species commonly known as *baya*.

In the course of the volume no less than 31 new names are proposed for species and subspecies (all of course, *more Brittanico*, binomial in form), and 11 new generic names are introduced, the latter being as follows: 1. *Spodiopsar* = *Poliopsar* Sharpe, preoccupied; 2, *Chalcopsar* = *Megalopterus* Smith, preoccupied; 3, *Hagiopsar*, type *Amydrus tristrami* Scl.; 4, *Heteropsar*, type *Lamprocolius acuticaudus* Boc.; 5, *Penthetriopsis*, type *Loxia macroura* Gm.; 6, *Stictospiza*, type *Fringilla formosa* Lath.; 7, *Granatina*, type *Fringilla granatina* Linn.; 8, *Heterhyphantes*, type *Malimbus nigricollis* Vieill.; 9, *Nesacanthis*, type *Foudia eminentissima* Bon.; 10, *Chersophilus*, type *Alauda duponti* Vieill.; 11, *Heliocorys*, type *Galerita modesta* Heugl.—J. A. A.

Hargitt's Catalogue of the Woodpeckers.*—The well circumscribed family of the Woodpeckers comprises, according to Mr. Hargitt, 50 genera and 385 species and subspecies, represented in the British Museum by 7894 specimens. "As a rule," says Mr. Hargitt, "the species of the Picidæ are very clearly defined, but in *Dendrocopus* [= *Dryobates*], *Picoides*, and *Colaptes* there is a decided tendency to subdivide into races." Only in the case of the North American *Colaptes* does "there seem to be any definite appearance of hybridization." This leads him to the consideration of the question of what constitutes a species, and he accepts as the test non-intergradation with allied forms; "where intergradation takes place the allied form is a subspecies or race." On the question of insular forms he says, "Island forms may or may not possess some slight differences from typical birds, but not sufficient to separate them; yet some authors take it for granted that with insular separation there can be no intergradation: therefore we find insignificant islands made to father a host of indifferent species or subspecies; but I fail to see

* Catalogue | of the | Picariæ | in the | Collection | of the | British Museum. | — | Scansores, | containing the Family | Picidæ. | By | Edward Hargitt. | London: | Printed by order of the Trustees. | Sold by | Longmans & Co., 39 Paternoster Row; | [etc.] | 1890. 8vo. pp. xvi+598, pll. xv. = Catalogue of the Birds in the British Museum, Vol. XVIII.

(if perfect intergradation be insisted on in determining the position of a bird as a subspecies) how island forms can be reduced to this rank. . . . Some island forms, although they may certainly differ slightly from typical birds, have differences so suggestive of climatic variation only and not of specific value, that I take them upon their own merits and assign them a position accordingly."

The case of *Colaptes auratus* and *C. mexicanus* [=cafer] is discussed at some length, with a decided leaning to the theory of hybridization as an explanation of the mixed character of the specimens formerly recognized under the name *Colaptes hybridus*. He also makes some suggestive allusions respecting the evolution of the North American forms of *Colaptes*.

In matters of nomenclature we regret to see that Mr. Hargitt is a purist, and by no means a strict adherent of the law of priority. Generic names formed so nearly in accordance with their etymology as to be readily susceptible of emendation are accepted in an emended form, while those of barbarous or hybrid origin are rejected, without regard to the currency they may have obtained. In respect to specific names, those not pleasing to the author, through faulty significance or construction, are thrown over, regardless of previous currency.

While only one new species is apparently named in the present volume (*Sasia everetti* p. 559, pl. xv), we find the following new generic names: 1, *Sapheopipo*, type *Picus noguchii* Seeb.; 2, *Cercomorphus*, type *Picus flavus* Müll.; 3, *Microstictus*, = *Lichtensteinipicus* Bon., rejected; 4, *Nesocites*, type *Picumnus micromegas* Sundev.

The following points will be of interest to readers of 'The Auk,' from their bearing on North American birds, and as an indication of the author's methods. In respect to *Colaptes*, the specific name *mexicanus* of Swainson, 1827, is of course adopted in place of *cafer* Gmelin, 1788. Under *mexicanus* are synonymized both *ruficapileus* Ridgw. and *saturator* Ridgw., the former recognized as a species and the latter as a subspecies in the A. O. U. Check-List. Mr. Hargitt says: "The varied forms of *C. mexicanus* appear to be the result of climatic influence [!], as they are not confined to any particular geographical area [*sic*]. An examination of a large series of specimens convinces one that they cannot well be separated." He cites birds from Vancouver and Nevada that resemble others from Mexico. Has it occurred to him that the North American forms of *Colaptes* are migratory birds, that the particular examples mentioned from Mexico are either winter specimens or without record of capture, and that distribution in the breeding season is one of the most important elements of the problem?

The mixed assemblage presenting all sorts of combinations of the characters of *C. auratus* and *C. cafer*, which Baird proposed to call *C. hybridus*, is here treated as a *species*, under the name "*Colaptes ayresi*" of Audubon! His reasoning on this point is as follows: "The very existence of this race, occupying as it does a distinct region, seems to point to the conclusion that the birds are fertile, otherwise it would cease to exist,

and hybrids would only be found where the opposite species came in direct contact. . . . The breed may be one of long standing, but that it is replenished by pure blood from without seems highly probable, and may account for the violent contrast sometimes produced in the two sides of the same bird, which I think would not result in a race if left entirely to themselves, as the tendency would be towards the acquirement of a fixed character. The name given by this author [Audubon] must therefore be understood to apply to the race produced originally by the union of *C. auratus* and *C. mexicanus*, and possessing such varied characters as to render description vague and indefinite, but evidently suggestive of very close interbreeding, and not as tending to show that all the individuals comprising the race are the immediate descendants of true *C. auratus* and *C. mexicanus*. There can be no doubt that *C. auratus* also interbreeds with *C. chrysoides*, [and the same may be said of *C. mexicanus*] but I do not see how any specific title can be applied to these hybrids, which occupy no distinct region." While this is a pretty fair statement of the facts and conditions of the case, the method of treatment seems hardly consistent with the author's avowed tenets, above quoted.

The Mexican form, commonly known as *C. mexicanoides* Lafr. (1844), is called *submexicanus* Sundev. (1866), for the only reason apparently that the latter in some way seems to him to be a better name, thus supplanting a name hitherto in almost universal use by a much later name used previously but once!

Under *Melanerpes*, *M. formicivorus bairdi* is considered as a synonym of *Picus melanopogon* Temm., the form standing as "Subsp. a. *Melanerpes melanopogon*." It is evident, however, that *melanopogon* is a pure synonym of *formicivorus* Swain., as well from the original description and figure as from the locality of the type.

Dendrocopos Koch (type *Picus major* L.) replaces *Dryobates* Boie (type *Picus pubescens*). This point was well considered by the A. O. U. Committee, and *Dendrocopos* Koch was found to be apparently slightly antedated by *Dendrocopos* Vieill., though both names were published the same year. In any case *Dryobates* has a clear title, while *Dendrocopos* has not. Under *Dendrocopos*, *Dryobates hyloscopus* Cab. & Heine is synonymized with *D. villosus harrisi*, with no reference to the recent revival of *hyloscopus* to subspecific rank by American writers. *Dryobates villosus maynardi*, a Bahaman form, is recorded from Florida (Addenda, p. 570), on the basis of two females collected at Tarpon Springs, by Mr. W. E. D. Scott, and recorded by him (Auk, VI, p. 251) as *Dryobates villosus auduboni*. This latter form is synonymized by Mr. Hargitt with *D. villosus*! *D. pubescens oreæus* Batchelder is synonymized under *D. p. gairdneri*, with the remark, in a footnote, "In my opinion barely worthy of subspecific rank"; but it is not so treated.

Picoides dorsalis is accorded full specific rank—explainable probably on the ground of the smallness of Mr. Hargitt's series, the evidence of which is preferred to the consensus of American opinion, based on adequate material.

Mr. Hargitt's treatment of our Pileated Woodpecker presents a curious and lamentable case. He removes it from the genus *Ceophlæus* (the propriety of which we leave as merely a question of opinion) and places it under *Dryotomus* of Swainson (1831), of which he considers *Hylatomus* of Baird (1858) as a pure synonym, giving the *same species as the type of each*, namely, *Picus pileatus* Linn. Although Swainson placed *P. pileatus* under his genus *Dryotomus*, he expressly gives as its "Typical species," *Picus martius* (Fauna Bor.-Am., II, p. 301), thus making his *Dryotomus* a pure synonym of the genus *Picus*, as of late restricted, leaving *Hylatomus* Baird available for *Picus pileatus*, for those who wish to separate it from *Ceophlæus*. Furthermore, *Picus pileatus* appears to have been placed under *Dryotomus* by only two authors, Swainson and Bonaparte, and by no one since 1838, till Mr. Hargitt came on the scene, while it was almost universally recognized as *Hylatomus pileatus* from 1858 to 1886! Swainson simply treated *Picus pileatus* and *P. martius* as congeneric species under his genus *Dryotomus*, expressly naming *Picus martius* as the type! In reviewing works so indispensable and of such inestimable value to the ornithologist as are the volumes of the British Museum 'Catalogue of Birds,' it is painful to find one's self confronted with misleading statements on points of vital importance in nomenclature, of which the above is unfortunately by no means an isolated case. —J. A. A.

Merriam's 'Results of a Biological Survey of the San Francisco Mountain Region and Desert of the Little Colorado, Arizona.'—In 'North American Fauna, No. 3,'* Dr. C. Hart Merriam, Chief of the Division of Ornithology and Mammalogy, U. S. Department of Agriculture, gives an account of results of a biological survey of the San Francisco Mountain region in Arizona made by him, with a small corps of assistants, during August and September, 1889. The area surveyed carefully comprised about 5,000 square miles, while 7,000 more were roughly examined, and a biological map prepared of the whole. In addition to Mr. Vernon Bailey, Dr. Merriam had with him in the field Prof. F. H. Knowlton, assistant paleontologist, U. S. Geological Survey, and Dr. Leonhard Stejneger, curator of reptiles in the U. S. National Museum. The report consists of (1) General Results, with special reference to the geographical and vertical distribution of species. (2) Grand Cañon of the Colorado. (3) Annotated List of Mammals with descriptions of new species. (4) Annotated List of Birds. (5) Annotated List of Reptiles and Batrachians, with descriptions of new species. The last is by Dr. Stejneger, the others by Dr. Merriam, who also has an illustrated paper on 'Forest Trees of the San Francisco Mountain Region, Arizona,' and another on

*North American Fauna, No. 3. Published by authority of the Secretary of Agriculture. 8vo. pp. viii+136, with a frontispiece, 13 plates, and 5 maps. Published Sept. 11, 1890.

'Relation of a Biological Survey to Agriculture.' The strictly ornithological portions are: 'List of Birds noted at the Grand Cañon of the Colorado, Arizona, September 10 to 15, 1889' (pp. 38-41), embracing 57 species; and an 'Annotated List of Birds of the San Francisco Mountain Plateau and the Desert of the Little Colorado River, Arizona' (pp. 87-101), comprising 150 species.

The work here under review is unique in its conception and methods, and of far-reaching importance in its results. Besides the discovery of many new species of mammals, and several new species of reptiles and plants, a systematic and detailed survey was made of the life zones of an isolated mountain peak, rising from the edge of an arid desert—a plateau region 7,000 feet above the sea—to an altitude of nearly 13,000 feet. In ascending "from the hot and arid desert of the Little Colorado to the cold and humid summit of the mountain no less than seven zones are encountered, each of which may be characterized by the possession of forms of life not found in the others." Each is discussed in detail, its characteristic animals and plants enumerated, and its relation to other faunal areas considered. Beginning at the summit is an 'Alpine Zone' (extending down to 11,500 feet), characterized by the prevalence of Arctic plants and a few Arctic animals, many of them circumpolar, not found at ordinary levels south of the tundras and barren grounds, and at intervening points only on the tops of the highest mountains. Below this is a 'Sub-Alpine or Timber-line Zone' (between 11,500 and 10,500 feet), likewise characterized by boreal forms of life, which, however, range much further south than the species characterizing the Alpine Zone. Below this is the 'Hudsonian or Spruce Zone,' corresponding to the so-called Hudsonian Fauna of boreal North America (northern New England to Labrador). Below this, in descending order, are the 'Canadian or Balsam Zone'; the 'Neutral or Pine Zone'; the 'Piñon Zone'; and the 'Desert Zone.' These are strikingly illustrated in a colored 'diagrammatic profile,' forming plate I of the accompanying illustrations.

From the study of the life zones of San Francisco Mountain, the author passes to 'Generalizations concerning the Distribution of Life in North America.' As recognized more or less vaguely by previous writers, the present life of the North American continent is derived primarily from two sources, a northern and a southern, the former circumpolar, the latter tropical. The extratropical portion of North America is divided into two primary life regions, a "Boreal" and a "Sonoran or Mexican table-land" region. On Dr. Merriam's 'Provisional Biological Map of North America showing the principal Life Areas' (Map 5), there are: (1) An Arctic division, limited at the southward by the beginning of forest vegetation. (2) A Boreal Province, extending obliquely across the continent from New England and Newfoundland to Alaska, with prolongations southward along the principal mountain ranges. This nearly coincides with what has been sometimes termed the Cold Temperate Region. (3) A Sonoran Province, occupying the region intervening between the

Boreal and the Tropical Provinces, and corresponding to the Warm Temperate Region of some authors. (4) The Tropical Province, extending into North America from the south, and embracing Central America and the Antilles, the lowlands of Mexico, and a narrow coast belt of southern Florida.

For many years that portion of North America situated mainly within the United States has been divided into a so-called Eastern Province, a Middle Province, and a Western Province. While these 'Provinces' (established by Baird in 1866) have been hitherto generally accepted, they have been unsatisfactory and troublesome, but have escaped searching analysis till taken in hand by Dr. Merriam in the present paper. Following the clue furnished by the evident fact that the life of middle North America is made up of increments from both the north and the south, and that the boreal element extends far to the southward at the higher elevations, while the life from the south occupies the intervening lowlands, resulting in the interdigitation of areas stocked respectively with northern and southern types, it became clear that these long recognized Provinces were untenable, in so far at least as any basis for the so-called 'Middle' or 'Central' Province is concerned. This Central Province was made up of the Rocky Mountain region, the Great Plains to the eastward, and the Great Basin to the westward. The Rocky Mountain region evidently derived its life from the north, and is essentially a part of the 'Boreal' or Cold Temperate life-region. The life of the Great Plains and the Great Basin is as obviously derived mainly from the south, with an intermixture of more or less modified northern elements. With this key to the problem Dr. Merriam has separated his Sonoran Province (which is made to include the whole breadth of the continent) into six 'sub-regions,' as follows: (1) an Arid or Sonoran sub-region, occupying the table-land of Mexico, western Texas, portions of New Mexico, Arizona, and southern California; (2) a Californian sub-region, occupying the greater part of California; (3) a Lower Californian sub-region; (4) a Great Basin sub-region, embracing the area between the Rocky Mountains and the Sierra Nevada, north to the Plains of the Columbia; (5) a Great Plains sub-region, extending from Northern Texas to the Plains of the Saskatchewan; (6) a Louisianian or Austroriparian sub-region, occupying the eastern United States from the southern border of the Alleghanian Fauna, as commonly recognized, southward to the Gulf coast, and thus equivalent to the Carolinian and Louisianian Faunas, as usually limited by ornithologists. These regions are all shown in colors on Map 5, but the distinguishing elements of each are not stated. They seem, however, fairly tenable, though set forth as merely provisional, and presumably open to some modification. Even the terms to designate the relative rank of the various subdivisions are used tentatively, the whole scheme of nomenclature requiring careful attention, since nearly every term employed for the designation of the different grades of life areas has been used differently by different authors. The matter

sadly needs rigorous sifting, and placing on a basis comparable with the terms used for groups in zoölogy, and in geological terminology.*

Some twenty years since North America east of the Great Plains was subdivided, on the basis of bird life, into a series of minor areas termed faunas, eight in number, including the whole Atlantic coast region, from the southern extremity of Florida to the Arctic coast. At that time our knowledge of the North America fauna at large was too imperfect to permit the extension of similar generalizations to other parts. Although our knowledge of the middle and western portions of the continent has since greatly increased, it is still insufficient for final work in respect to the minor faunal areas, coördinate in rank with the 'faunas' recognized for the Atlantic coast region. In Dr. Merriam's 'Map of Arizona showing the Life Areas of the Colorado Plateau south of the Grand Cañon' (Map 1), and in his maps 2, 3, and 4 of 'San Francisco Mountain and Vicinity,' devoted to the distribution of various species of forest trees, a model is set which may well be emulated in the prosecution of similar work. Investigation of large areas on this minute scale, however, is beyond the means of individual workers; on this account, and from its high economic importance, it is a proper undertaking for a Bureau of the Government; and it is most gratifying that the appropriations for such work—this year fortunately much increased—are sure to be so wisely and economically expended. The present report is an emphatic illustration of the practicability, the scientific interest, and the economic importance of a careful biologic survey of our vast territory.

The publication of these results will doubtless incite other investigators to activity, and it is hence important that certain questions of nomenclature should be speedily settled. At the last Congress of the A. O. U., Dr. Merriam presented in abstract an extended paper on 'The Primary Faunal Regions of North America,' illustrated by colored maps on a uniform scale, showing comparatively the results of all previous work on the subject, and presenting a bibliographical and historic *résumé* of each contribution to the general subject of North American life areas, including the work of botanists as well as zoölogists. Such a summary should present a basis for a consistent scheme of terminology and nomenclature, based as far as possible on the rule of priority. The terms 'fauna,' 'area,' 'region,' etc., are used commonly in a general or non-technical sense, but often also technically, to designate a definite grade in the scale of subdivisions. In like manner "transitional area," or "transitional region," is of necessity used in a general and non-technical sense, but is reprehensible when used in a specific sense, as has been sometimes the case, since any region lying between two others, is, in the very nature of things, more or less transitional in character; hence the term is better reserved for the designation of a condition rather than for the indication, in the sense of a nomenclatural term, of any geographic area.—J. A. A.

* Cf. Allen, Bull. Mus. Comp. Zoölogy, Vol. III, No. 2, 1871, pp. 378, 379.

Seebohm's Birds of the Japanese Empire.*—As a fitting conclusion to his numerous and valuable contributions to Japanese ornithology Mr. Seebohm has issued a handsome volume which intends to be a representation of the present status of the avifauna of Japan. His first labor in this field commenced eleven years ago with a paper entitled 'Remarks on Messrs. Blakiston and Pryer's Catalogue of the Birds of Japan' (*Ibis*, 1879, pp. 18-43), and the book before us may—in some respects at least—be regarded as a further elaboration of that same 'Catalogue' which started a new era in Japanese ornithology. This being the case, it is highly to be regretted that Mr. Seebohm has not found it necessary to refer to the numbering and nomenclature of Blakiston and Pryer's catalogue in each special case, the more so since he has deemed a synonymy of the species entirely superfluous. The omission is particularly unfortunate, for it will be remembered that Mr. Seebohm's rules of nomenclature, as well as their enforcement and application, are entirely his own, and quite unique. I shall only mention a few examples. Mr. Seebohm is, I believe, the inventor of the now famous '*auctorum plurimorum*' principle which was intended to strike terror to the hearts of those authors who believe in an inflexible law of priority. But like most lawmakers, Mr. Seebohm does not feel himself bound by his own laws. If he can discover ("rake up" is his own expression, *Br. B. Eggs*, I, p. xix) an old and musty name, then the '*auctorum plurimorum*' appellation is flung to the winds, and forgotten is the proud announcement: "It is not necessary for me to encumber my nomenclature with a third name, either to denote the species to which it refers, or to flatter the vanity of the author who described it." We have once before called attention to this with regard to *Diomedea albatrus*, and we are again forcibly reminded of it by finding the Sacred Crane of Japan called *Grus japonensis*. Fancy Mr. Seebohm "raking up" one of Philip Statius Müller's names! But Mr. Seebohm is nothing, if not inconsistent. In 1883-1885 he published a most delightful 'History of British Birds' in three volumes. In this he gives a very elaborate and, in most cases, very accurate synonymy of every English bird, even the most common ones. Looking over the English ornithological literature one is almost tempted to regard such a proceeding as equivalent to carrying coals to Newcastle. Five years later, when treating of the comparatively unknown birds of Japan, presumably for the benefit of readers who have but little opportunity to settle the questions of synonymy for themselves, he finds these lists "useless." How is the ornithological student in Japan, who has no other book of reference than Seebohm's, to locate such names as *Cuculus telephonus*, *Corvus orientalis*, *Dryobates leucotos*, *Columba intermedia*, *Turtur douraca torquatus*, etc., etc., which occur in other publications on Japanese ornithology? These synonymical lists would certainly be much more useful in a work on the 'Birds of the Japanese Empire,' than the large woodcuts and descriptions of the deep

*The Birds of the Japanese Empire | By | Henry Seebohm | London: R. H. Porter. | 1890. 8vo., pp. xxiv+386, with map and figures in the text.

plantar arrangement of the tendons, the shape of the sternum, the osteology of the feet, etc., of such birds as do not come within 5000 miles of Japan! By leaving out all this extraneous matter, and by adopting the same typography as in the 'History of British Birds,' enough space could have been obtained for exhaustive synonymies and full descriptions.

In regard to descriptions it may be stated that while there is one accompanying each species, it is in many, if not in most cases, insufficient. Usually it only refers to the adult bird, while in some instances it is hardly more than a pretense. What is thought of a specific description of "*Sitta cæsia*" (one is obliged to quote some of Mr. Seebohm's names in this way) consisting of the following words only: "The Nuthatch has the bill of a Woodpecker with the tail of the Tit"!

For those who know the birds which Mr. Seebohm treats of and the names he gives them the present volume is useful, because it gives a nearly complete list of all the birds hitherto recorded as inhabiting Japan, with most of the published information as to their occurrence and their habits, collected in one place. But it would have been more useful still, if it had had been more complete in both respects. Another reviewer has pointed out some of these omissions ('Nature' for Oct. 30, 1890), but the most obvious one has not yet been mentioned, for the celebrated *Pitta nympha* of the 'Fauna Japonica,' which our own Jouy re-discovered, is entirely left out!

On p. 32 *Bubo blakistoni* is given as peculiar to Japan, particularly Yezzo, though it has been recorded from the mainland by Taczanowski.

On p. 33 *Picus major japonicus* is said to be confined to the three main islands. This statement is wrong, for I do not believe there is a single instance on record of this species having been found in Kiusiu; I am pretty certain that it does not even occur in the southern part of Hondo beyond the line Owari-Tsuruga.

On p. 309 the breeding range of *Charadrius mongolicus* is stated to extend to the valley of the Amoor, although I have long ago shown it to breed as far east and north as the Commander Islands, Kamtschatka. This reminds me of the fact that in 1887, in his great monograph of the Charadriidæ (p. 148), Mr. Seebohm states that the eggs of this species are "unknown," he having overlooked entirely that two years previously I described a fully authenticated set collected by myself and now in the collection of the U. S. National Museum.

I could go on with similar remarks, but as a reviewer's space is limited, and as I shall undoubtedly in the future have occasion to discuss these and many other points in Mr. Seebohm's book I shall only briefly call attention to the following, because they concern a group which I have already treated of in detail before.

The present writer in the 'Proceedings' of the U. S. National Museum for 1887 (Vol. X, pp. 416-429) published a 'Review' of the Japanese Pigeons, in which he treated of considerable new material and corrected several grave errors of previous authors. It is very discouraging to find that one has labored in vain. Some of the things in that paper Mr. Seebohm has seen—though in his peculiar manner, others he has entirely overlooked. Of *Fanthenas nitens* he says that it was made a new species

"on the ground that the head is brown instead of gray," and adds: "the difference is doubtless due to abrasion." It was doubtless nothing of the kind. The specimen was not at all in abraded plumage as will also be perfectly clear from my original description which says: "Entire head and throat of a dull cinnamon-chocolate, glossed with lilac on crown and occiput." Has anybody ever seen a slate colored ground color change to cinnamon-chocolate glossed with lilac by any sort of abrasion?

In that same paper I demonstrated beyond the remotest doubt, that *Turtur risorius* belongs to an entirely different subgenus from that which embraces the wild Japanese Ringed Turtle-dove, and, moreover, that the Barbary Turtle-dove, the true *T. risorius*, is also found tame in Japan. Yet, without a word of comment, Mr. Seebohm perpetuates the old and now "unpardonable blunder" (to use a Seebohmian expression).

Finally, all that Mr. Seebohm knows of the occurrence of *Turtur humilis* in Japan is limited to the example obtained by Mr. Owston from a dealer at Yokohama, in spite of the fact that on pp. 428-429 (*tom. cit.*) I gave an elaborate description of a specimen from Nagasaki.

Before concluding I should like to say a few words of the figures. Besides the exquisite woodcuts reprinted from his monograph of the Charadriidæ, we find a number of more or less crude drawings of heads. If the enormous beaks of "*Fratercula*" *pygmæa* and *pusilla* correctly represent Japanese specimens, we have certainly to do with species differing from those occurring in Kamtschatka and Alaska, but that is highly improbable. The Shags of the species "*pelagicus*" and "*bicristatus*" seem to be as much of a stumbling block as ever, in spite of all the reviewer has written and painted about them. The head on p. 210 does certainly not represent a *pelagicus*, and is probably a young *bicristatus*. The head on p. 211 looks much more like a different species than a *bicristatus*, and unless the drawing is very inaccurate the specimen from which it is taken is something else.

In reviewing this work I have felt keenly that fault-finding comes with but little grace from one who works in the same special field as the author whose work he criticizes. But, on the other hand, he is expected to speak, because he is supposed to know something about it, and it then becomes necessary to show neither fear nor favor. Mr. Seebohm himself has never handled his colleagues with gloves, and he himself would be the first one to resent any attempt at establishing a mutual admiration society.—L. STEJNEGER.

Warren's Revised Report on the Birds of Pennsylvania.*—The great demand which arose for this 'Report' immediately upon the publication of the first edition in 1888, led the Legislature to order an enlarged and

* Report | on the | Birds of Pennsylvania. | With Special Reference to the Food-Habits, based on over Four | Thousand Stomach Examinations. | By | B. H. Warren, M. D., | Ornithologist, Pennsylvania State Board of Agriculture. | Second Edition, Revised and Augmented. | Illustrated by One Hundred Plates. | — | Published by Authority of the Commonwealth. | — | Harrisburg: | E. K. Meyers, State Printer | 1890.—8vo. pp. xiv, 434, pll. 100.

revised edition; upon the preparation of this Dr. Warren has been engaged during the past two years, and the present volume is the result.

The primary purpose of the Report is not to lay before the scientific public the outcome of the author's investigations, though a great deal of important original matter is actually given; its object is simply to instruct the people of Pennsylvania in regard to the birds of their State, and especially to give the farmers all available information as to the bearing upon their own interests of the food habits of the various species. In a way the book seems intended to fill a place today in Pennsylvania very similar to that so long occupied in Massachusetts by Samuels' 'Birds of New England'; and it is amply qualified to do so.

The book begins with a brief introduction which includes a geographical description of the State of Pennsylvania and a list of the anatomical terms used in the descriptions of species, the latter illustrated by a plate to make the subject clear to the inexperienced. After this comes the body of the work, occupying 331 pages, in which 298 species are treated. Each family or subfamily is introduced by a concise and well-planned account of its habits, nesting, and distribution, and its distinctive physical characters. Under each species is given a description, expressed in unusually simple language, brief, yet generally sufficient to identify the bird. "The greater portion of the descriptions . . . are original, having been taken principally from specimens in the author's collection," but in some cases lack of material has made it necessary to quote from Baird, Coues, or Ridgway. Following the description comes a statement of habitat, copied, occasionally with slight changes, from the A. O. U. Check-List. The rest of the text treats of the times of occurrence, the abundance, and local distribution, of the bird in Pennsylvania, and, often in considerable detail, of its habits, nesting, and food. These accounts are based upon "field observations made by the writer, during the past ten or twelve years, in the State of Pennsylvania." When these prove insufficient the gaps are filled by extracts from the writings of Audubon, Nuttall, Coues, and various others. In the case of many of the less common species the author has incorporated the previously unpublished notes of a number of observers in different parts of Pennsylvania. In some cases their reports are given in tabulated form, showing very satisfactorily the evidence as to abundance and seasons of occurrence throughout the State.

While these accounts are on the whole eminently satisfactory, and adapted with great discretion to the purpose of the Report, there is one fault which cannot be overlooked,—at least by the scientific ornithologist. Occasionally rarities are recorded with but the barest mention of the circumstances; giving rise unavoidably to painful doubts in the reader's mind as to the correctness of the record. A case in point is *Dendroica kirtlandi*, which is given as breeding, on the strength of the statement by a correspondent that he "saw one and its family." Apparently none of the "family" were secured, and the author seems content to remain in ignorance as to whether or not even the parent bird was taken. For-

unately cases like this are few, but they incline one to caution in accepting some other interesting statements made by his correspondents in regard to matters that have not come under Dr. Warren's own observation. If some of these records are not of sufficient interest to the general reader to be given more space in the book itself, their full details, if substantiated, should at least be published elsewhere; and if not fully sustained, there is no excuse for their appearance in print at all.

The book ends with an appendix of 92 pages, which includes an account of the Pennsylvania 'Scalp Act'; extracts from reports of the U. S. Department of Agriculture (54 pages) upon "Food of Hawks and Owls," "The Food of Crows," and "The English Sparrow"; a tabulated report of birds that struck a light-house at Atlantic City, N. J., in the autumn of 1889; a list of publications quoted in the Report, and of observers who contributed to it; and a glossary of technical terms.

One feature, invaluable in a work of popular instruction in such a subject, is the unusual abundance of colored plates which, happily, legislative authority has bestowed with an enlightened liberality. These number altogether 99, and on them are shown 160 species, often two or three different plumages of one species being exhibited. By the terms of the legislative 'order to print' the lithographer was restricted in the number of colors to be used, but in spite of this he has succeeded in producing plates that in almost every instance will be of the utmost usefulness in aiding the learner to identify the birds he meets. In a few cases, *e. g.*, some of the Thrushes and Sparrows, the close similarity in coloring of the species has proved too much for the artist's abilities,—or for the means at his command,—and we fear that the seeker after knowledge will get but little aid from them. Most of the figures are of course reduced in size, and unfortunately the proportion between the actual sizes of different species represented on the same plate has sometimes been overlooked, with results that may now and then prove confusing to a careless reader. Another point that is open to criticism is the order, or lack of order, in which the plates are arranged,—utterly without regard to the sequence of the species in the text. Sea Birds face the text that treats of Woodpeckers, Warblers appear opposite the accounts of Birds of Prey, and Wrens and Waders are seen where Sparrows and Finches would be looked for.

Yet if the book be considered as a whole, its few faults are chiefly such as are objectionable from the standpoint of the scientific ornithologist, and detract little from its value as a hand-book for the people; whereas if we look in the other scale we see a book, well proportioned, readable, full of just the information that the public needs, one that can hardly fail to mark an era in the popular knowledge of ornithology, at least in this much favored State. The author is to be congratulated upon having accomplished a work of such far-reaching usefulness, and we hope that the Legislature of Pennsylvania may see fit to complete its good work by enlarging the edition of the Report to such a degree as to bring it within the reach of all who are interested in the subject.—C. F. B.

Belding's 'Land Birds of the Pacific District.'*—In this book, prepared originally as a report to the Department of Agriculture upon the distribution and migrations of the birds of the Pacific Coast, Mr. Belding has brought together his own field notes and those contributed by a number of other observers, and has added to them brief extracts from the literature relating to the region. In arranging this material under the heads of the species, each contributor's quota is given by itself in a short paragraph headed by the locality and authority, and usually in the writer's own words. Of course with such a system the literary result is often fragmentary and disjointed, but in a work of reference this is sometimes better than to give—as writers are too often tempted to do—a smooth generalization beneath which it is impossible to distinguish the isolated facts supporting it from the well-concealed gaps between them.

Of course the accounts of most of the species are by no means complete. This was indeed unavoidable in treating a region one fourth as large as the United States, where observers have been so few and observations have been seldom carried on continuously for any considerable length of time. In spite of these drawbacks Mr. Belding has succeeded in gathering a large amount of valuable material which will make his book an indispensable one. It is to be regretted though that he did not have the assistance of all the observers within the limits of his district and that he did not compile all the reliable published records.

Furthermore we are occasionally inclined to deplore his liberality in admitting to the list some species of whose occurrence in the area under consideration little or no evidence is adduced.

But on the whole, although the book may not be faultless, it is one that cannot fail to be of much service to all students of Pacific Coast birds.—C. F. B.

A Catalogue of the Birds of New Jersey.†—After an interval of twenty-two years the Geological Survey of New Jersey again presents a Catalogue of the birds of the State. It might fairly be presumed that the advance made in the study of ornithology during this period would, in a measure, be apparent in the list before us, but when we find that to the numerous errors of Dr. Abbott's list, there have been added others of equally unpardonable, if not now so glaring, a nature, it becomes obvious that science will not be benefitted by this recent production.

*Occasional Papers | of the | California | Academy of Sciences. | II. | — | Land Birds | of the | Pacific District | by | Lyman Belding. | San Francisco: | California Academy of Sciences, | September, 1890. 8vo., pp. [iv.] 274.

† Geological Survey of New Jersey. | — | Final Report | of the | State Geologist. | — | Vol. II. | — | Mineralogy. | Botany. | Zoology. | — | Trenton, N. J. | Printed by the John L. Murphy Publishing Company. | — | 1890. | Descriptive Catalogue | of the Vertebrates of New Jersey, | (a revision of Dr. Abbott's Catalogue of 1868). | Prepared by Julius Nelson. Ph. D.

The author wisely follows "Ridgway's 'Manual of North American Birds' . . . in the nomenclature of the families and smaller groups," but adopts an original system of classification. The "Scansores" head the list, which then follows the 'Manual' to *Sialia*; this genus is succeeded by the Raptores and the 'Manual' is again followed with the families in inverse order; the Podicipidæ and Alcidiæ, however, are transposed and the Catalogue concludes with *Alle*. Trimomials are preceded by the abbreviation 'var.' or are hyphenized with the specific name, while brief descriptions, based largely on Ridgway's diagnoses, are given of each species and subspecies. In quotation from Dr. Abbott's list *Passerella iliaca*, *Seiurus noveboracensis*, *Troglodytes hiemalis*, *Regulus satrapa*, *R. calendula*, etc., are given as *summer* residents, while apparently on his own authority the author gives numerous records which, if they can be substantiated, will add considerably to our knowledge of the birds they refer to. *Contopus borealis* is cited as "A northern form ranging as far south as New York, and should be looked for in our northern Counties," where also "hunters" are warned to look out for additional specimens of *Acanthis brewsteri*. *Dendroica kirtlandi* is included as "Rare. Seen during the migrations."

Beyond an evident effort at intelligent work, the reviewer discovers nothing to commend, but the effort falls so far short of success and exposes such lamentable ignorance of the subject and lack of original investigation, that the result can only be regarded as a compilation made under most unfortunate circumstances and unworthy of extended criticism.—F. M. C.

Rives's 'Catalogue of the Birds of the Virginias.'*—This catalogue of the birds of Virginia and West Virginia is so admirably proportioned, and so carefully worked out in its details, that it might well serve as a model for works of its kind. The paper begins with a review of the early accounts of Virginia birds, a dozen pages being filled with extremely interesting extracts from the writings of various travellers and colonists, from William Strachey in 1610 to Andrew Burnaby in 1775. Following this is a bibliographical list of the more important papers upon the region, that have appeared in recent years (1862-1889). Then comes an introductory chapter of fifteen pages discussing the topography, climate, flora and fauna, accompanied by a colored map showing, theoretically at least, the distribution of the usually recognized faunas occurring within the area. This is followed by the catalogue proper, in which 304 species and subspecies are treated, half a dozen lines or more being given to each. These accounts are based upon considerable "personal observation in dif-

*Proceedings | of | The Newport | Natural History Society, | [Seal] | 1889-90. | —
 | Document VII. | — | A Catalogue of the Birds of the Virginias, | by Wm. C. Rives
 M. A., M. D. | — | Newport, R. I.; | printed for the Society by T. T. Pitman, |
 October, 1890. 8vo., pp. 100, with map.

ferent localities, especially in Albemarle County, and upon the various papers already published, together with several other sources of information." The latter seem to include especially local reports to the Division of Economic Ornithology and Mammalogy of the Department of Agriculture, and manuscript notes from Captain Charles H. Crumb of Cobb's Island. The literature of the subject has been searched with extreme thoroughness, and selected with excellent judgment. We are told the things we want to know, and few, if any, records of importance have been overlooked. Indeed, if any criticism is possible, it is that occasionally some record has been quoted that might as well have been ignored. The paper closes with a 'hypothetical list' of forty species and a good index.—C. F. B.

Minor Ornithological Publications.—The following 'amateur' journals are similar in character to those noticed in Vol. VII, pp. 79-86.

The Hawkeye Ornithologist and Oölogist.

This monthly, published at Cresco, Iowa, by E. B. Webster, made its first appearance in January, 1888, and stopped with Vol. II, No. 9, September, 1889. It contains among other articles and notes the following (Nos. 1933-1943):—

1933. *Carolina Wren*. By J. W. Jacobs. '*The Hawkeye Ornithologist and Oölogist*,' Vol. I, No. 3, March, 1888, p. 37.—Nests and eggs.

1934. *Habits of Some American Grebes*. By Oliver Davie. *Ibid.*, pp. 38-39.

1935. *Reminiscences of the Early Life of a Tame Crow*. *Ibid.*, pp. 43-44.

1936. *The White-rumped Shrike in Western New York*. By Neil F. Posson. *Ibid.*, No. 7, July, 1888, pp. 95-96.—Nesting habits.

1937. *Nesting of the Sharp-tailed and Seaside Finches*. By C. S. Schiek. *Ibid.*, No. 8, August, 1888, pp. 102-103.

1938. *Nidification of the Osprey*. By Walter Raine. *Ibid.*, No. 9, Sept., 1888, pp. 113-114.

1939. *Nesting of the White-breasted Nuthatch*. By J. Warren Jacobs. *Ibid.*, No. 10, October, 1888, pp. 119-120.

1940. *Birds of Greenbriar County, West Va.* By Thaddeus Surber. *Ibid.*, Vol. II, No. 1, Jan., 1889, pp. 2-4; No. 2, Feb., 1889, pp. 13-15; No. 3, March, 1889, pp. 29-32.—A list of 121 species.

1941. *The Red-breasted Nuthatch*. By Neil F. Posson. *Ibid.*, No. 4, April, 1889, pp. 37-38.

1942. *Nesting of the Kentucky Warbler in Southwestern Pennsylvania*. By J. Warren Jacobs. *Ibid.*, pp. 38-41.

1943. *Robins Ahead Again*. By S. A. Ball. *Ibid.*, No. 5, May, 1889, pp. 46-47.—Early nesting.

The Oölogists' Exchange.

'The Oölogists' Exchange,' a four-page monthly, was published first in January, 1888, at Austin, Ill., by T. Vernon Wilson (Vol. I, Nos. 1-7);

[Oölogists' Exchange.—Continued.]

next at Sharon, Wis., by Dickinson & Durkee (I, 8-12); lastly at New York by Arthur E. Pettit (II, 1-11). This closed its existence in February, 1890. We note the following (Nos. 1944-1953):—

1944. *Topographical Oölogy*. By Frank H. Nutter. 'The Oölogists, Exchange,' Vol. I, No. 4, April, 1888.—*Buteo pennsylvanicus*, *Accipiter cooperi*, *Botaurus lentiginosus*.

1945. *The White-rumped Shrike*. By Zach. Taylor. *Ibid.*, No. 5, May, 1888.—Nesting habits.

1946. *The Killdeer Plover*. By E. F. Gamble. *Ibid.*

1947. *Cranes and Cormorants*. *Ibid.*, No. 7, July, 1888.—Nesting of *Ardea herodias* and *Phalacrocorax dilophus*.

1948. *The Hooded Warbler*. By 'Scolopax.' *Ibid.*

1949. *From the Sunflower State*. By D. B. R. *Ibid.*, No. 11, Nov., 1888.—*Ardea herodias*.

1950. *Nest of the Black-billed Magpie*. By Ferd. M. Stephens. *Ibid.*, No. 12, Dec., 1888.

1951. *The American Hawk Owl (Surnia ulula caparoch) in Wisconsin*. By W. E. Carter. *Ibid.*, Vol. II, No. 2, May, 1889.—Nest and eggs said to have been found.

1952. *The Great White Heron*. By T. G. Pearson. *Ibid.*, No. 4, July, 1889.

1953. *Brown Pelican*. By W. E. Hillman. *Ibid.*, No. 8, Nov., 1889.

The Loon.

'The Loon,' issued monthly by Thad. Surber at White Sulphur Springs, W. Va., began in January, 1889, and ended with Vol. I, No. 10, October, 1889. It contained the following articles worthy of mention (Nos. 1954-1957):—

1954. *A Tame Plover*. By E. B. Webster. 'The Loon,' Vol. I, No. 2, Feb., 1889, pp. 9-11.—*Charadrius dominicus*.

1955. *Blackbirds and Migration*. By S. A. Ball. *Ibid.*, No. 7, July, 1889, pp. 49-51.

1956. *Eggs of Nyctale acadica*. By C. W. Swallow. *Ibid.*, No. 9, Sept., 1889, pp. 67-68.

1957. [*Robins attacking a Hen*.] By A. MacLeod. *Ibid.*, pp. 68-69.

The Ornithologists' and Oölogists' Semi-annual.

This semi-annual, one of the best of these journals now existing, was first published January, 1889, at Pittsfield, Mass., by W. H. Foote. In its first two volumes (1889-1890) we note the following (Nos. 1958-1990):—

1958. *The Cardinal Grosbeak*. By J. A. Singley. 'The Ornithologists' and Oölogists' Semi-annual,' Vol. I, No. 1, Jan., 1889, pp. 18-19.

1959. *The Bell's Vireo*. By Lynds Jones. *Ibid.*, pp. 41-42.—Breeding habits.

1960. *Brains of Birds*. [By Austin F. Park.] *Ibid.*, pp. 44-45.—From an article in the 'Troy Times.'

[Ornithologists' and Oölogists' Semi-annual.—Continued.]

1961. *A Trip to Thompson's Lake.* By Dr. W. S. Strode. *Ibid.*, No. 2, July, 1889, pp. 3-8.—Birds breeding about a small lake in Illinois.

1962. *The Yellow-winged Sparrow.* By Lynds Jones. *Ibid.*, pp. 8-9.—In Iowa.

1963. *The Large-billed, or Louisiana, Water Thrush.* By C. C. Maxfield. *Ibid.*, pp. 13-14.—In western New York.

1964. *The Wilson's Phalarope.* By Wm. G. Smith. *Ibid.*, pp. 14-15.—As observed in Colorado.

1965. *Nesting of the Purple Gallinule.* By Jas. H. Rachford. *Ibid.*, p. 16.

1966. *The Chewink; Towhee.* By Lynds Jones. *Ibid.*, pp. 25-26.—Nesting habits.

1967. *The Lark Finch.* By J. A. Singley. *Ibid.*, p. 28.—Nesting habits in Texas.

1968. *The Western Yellow-winged Sparrow.* By J. A. Singley. *Ibid.*, p. 36.

1969. *My Hunt for the Blackpoll Warbler.* By F. H. Carpenter. *Ibid.*, pp. 38-40.

1970. *Floating Feathers from the West.* By Chas. A. Keeler. *Ibid.*, Vol. II, No. 1, Jan., 1890, pp. 3-5.—Brief sketches of several California birds.

1971. *Winter Birds of Raleigh, N. C.* By C. S. Brimley. *Ibid.*, pp. 7-10.

1972. *Observations from the Deck of a Steamer.* By L. Otley Pindar. *Ibid.*, pp. 11-12.—On the Mississippi and Ohio Rivers.

1973. *Collecting off the Coast of Maine.* By Chas. S. Butters. *Ibid.*, pp. 13-15.

1974. *Nesting of the Williamson's Sapsucker.* By Wm. G. Smith. *Ibid.*, pp. 15-16.

1975. *The Golden Eagle.* By Geo. F. Breninger. *Ibid.*, pp. 17-21.

1976. *The Nidification of the Golden Eagle.* By W. Raine. *Ibid.*, pp. 21-25.

1977. *The American Long-eared Owl.* By Dr. W. S. Strode. *Ibid.*, pp. 26-28.—Nesting habits.

1978. *Notes on Breeding Habits of Brown-headed Nuthatch at Thomasville, Georgia.* By C. J. Pennock. *Ibid.*, pp. 29-31.

1979. *How the Cooper's Hawk hunts his Prey.* By H. H. Brimley. *Ibid.*, pp. 32-34.

1980. *Report of the Melological Committee.* By S. Willard Bridgham. *Ibid.*, pp. 41-47.—Some account of the singing of various common birds.

1981. *The American Sparrow Hawk.* By Dr. W. S. Strode. *Ibid.*, No. 2, July, 1890, pp. 3-6.—Chiefly nesting habits.

1982. "George." By H. H. Brimley. *Ibid.*, pp. 6-8.—A captive Barred Owl.

1983. *Some Hints on Finding Nests.* By C. S. Brimley. *Ibid.*, pp. 9-10.—Brief notes on several birds in North Carolina.

[Ornithologists' and Oölogists' Semi-annual.—Continued.]

1984. *The Rocky Mountain Screech Owl*. By Wm. G. Smith. *Ibid.*, p. 11.—Nesting habits.

1985. *The Catbird*. By Wm. L. Kells. *Ibid.*, pp. 12-15.—In Ontario.

1986. *The Burrowing Owl*. By F. T. Pember. *Ibid.*, pp. 16-18.—Nesting habits especially.

1987. *Among the Gulls at Duck Island*. By Chas. S. Butters. *Ibid.*, pp. 21-23.—On the coast of Maine.

1988. *Nesting of the Turkey Buzzard*. By Jno. A. Donald. *Ibid.*, pp. 25-26.

1989. *The Prairie Horned Lark*. By Lynds Jones. *Ibid.*, pp. 27-29.

1990. *The Thrushes*. By Charles D. Oldright, Lynds Jones, Willard N. Clute, *et al.* *Ibid.*, pp. 32-43.—Reports by members of the Wilson Ornithological Chapter of the Agassiz Association, chiefly upon nesting and migration of *Minus polyglottos*, *Galeoscoptes carolinensis*, *Harporhynchus rufus*, *Turdus mustelinus*, *T. fuscescens*, *T. a. pallasii*, *T. u. swainsonii*, *Merula migratoria*.

The Hoosier Naturalist : The Naturalist.

'The Hoosier Naturalist' was published first at Valparaiso, Indiana, by A. C. Jones and R. B. Trouslet as a monthly in August, 1885; Mr. Jones retired after the issue of Vol. I, No. 5. With the end of Vol. II (July, 1887) publication was suspended, but was resumed with Vol. III, No. 1, in January, 1888, as a bi-monthly. At the close of 1888 the place of publication was changed to Kansas City, and the journal became a monthly with a change of title to 'The Naturalist.' After Vol. IV, No. 2, Feb., 1889, publication was suspended until October, 1889, since when publication has continued monthly. We note the following in Vols. I-IV (Nos. 1991-2014) :—

1991. [*Notes on Sialia sialis and Tyrannus tyrannus.*] By W. C. Ransburg. 'The Hoosier Naturalist,' Vol. I, No. 1, Aug., 1885, p. 5.

1992. *An Insectivorous Kite*. By E. L. Brown. *Ibid.*, No. 3, Oct., 1885, p. 25.

1993. *Breeding Habits of Ardea herodias as seen during a Visit to Crane Town*. By [R.] B. [Trouslet.] *Ibid.*, No. 6, Jan., 1886, p. 81.

1994. *Birds of New Mexico*. By Charles H. Marsh. *Ibid.*, No. 7, Feb., 1886, p. 98; No. 8, March, 1886, p. 124.

1995. *Ruby-throated Humming Bird*. [By R. B. Trouslet.] *Ibid.*, No. 7, Feb., 1886, p. 100.—Habits in captivity.

1996. *Nesting of the Blue-winged Yellow Warbler*. By Thos. H. Jaedson [=Jackson]. *Ibid.*, p. 102.

1997. *Was it Instinct?* By 'Æsalon columbarius.' *Ibid.*, p. 108.—*Corvus americanus* hunting for food.

1998. *Bald Eagle*. By John B. Wheeler. *Ibid.*, p. 109.—Habits in Florida.

1999. *Great Horned Owl Eggs*. By James C. Jay. *Ibid.*, p. 112.

[Hoosier Naturalist: The Naturalist.—Continued.]

2000. *Notes on Winter Birds of East Hartford, Conn.* *Ibid.*, No. 8, March, 1886, p. 129.

2001. *A List of the Winter Birds of the Vicinity of Bloomington, Ind.* By W. S. Blatchley. *Ibid.*, Nos. 9 and 10, April and May, 1886, p. 151; No. 11, June, 1886, pp. 169-171.

2002. *New Mexican Humming Birds.* By Charles H. Marsh. *Ibid.*, p. 177; No. 12, July, 1886, pp. 192-193.

2003. *Changing Habits in the Nesting of Birds.* By L. T. Meyer. *Ibid.*, Vol. II, No. 2, Sept., 1886, p. 17.—*Chatura pelagica*, *Passer domesticus*, *Petrochelidon lunifrons*, *Sitta carolinensis*, *Sialia sialis*.

2004. *About My Pets—One of Them.* By 'The Hoosier Schoolmaster' [=—Rausburg]. *Ibid.*, No. 7, Feb., 1887, pp. 89-90.—*Icterus galbula*.

2005. *Prairie Chickens in Winter.* By C. B. J. *Ibid.*, p. 92.—Burrowing in the snow.

2006. *Birds of Monroe County, Indiana.* By Barton W. Evermann. *Ibid.*, No. 10, May, 1887, pp. 137-145.—A briefly annotated list of 178 species.

2007. *A Strange Place for a Nest.* By F. Vernor. *Ibid.*, No. 11, June, 1887, p. 160.

2008. *An Addition to the List of Birds of Monroe County, Indiana.* By B. W. Evermann. *Ibid.*, No. 12, July, 1887, p. 164.

2009. *A Voice from Florida.* By Chas. S. McPherson. *Ibid.*, pp. 165-166.

2010. *White-breasted Nuthatch.* [By R. B. Trouslet.] *Ibid.*, Vol. III, No. 2, March, 1888 [p. 5].

2011. *Birds of Western Florida. The Laughing Gull.* By Chas. S. McPherson. *Ibid.*, Nos. 4 and 5, July and September, 1888 [p. 20].

2012. *Vermont Notes.* By H. H. B. *Ibid.*, Vol. IV, No. 1, Jan., 1889 [p. 1].

2013. *The Shore Lark.* By Frank H. Nutter. *Ibid.*, No. 2, Feb., 1889 [p. 5].

2014. [Snowy Owls.] Editorial. *Ibid.*, No. 6, Jan., 1890 [p. 29].—C. F. B.

Publications Received.—Anthony, A. W. A New Junco from California. (*Junco hyemalis thurberi*). (Zoe, I, p. 238.)

Beddard, Frank E. On the Anatomy of *Podica senegalensis*. (P. Z. S. 1890, pp. 425-443, pl. xxxix.)

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Brusina, S. Motriocem Pticejega Svijeta. Aputak i popis domacih ptica. (Soc. Hist. Nat. Croatica.)

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Dresser, H. E. (1) Notes on the Racquet-tailed Rollers. (Ann. & Mag. Nat. Hist., Oct. 1890.) (2) Notes on some Birds collected by Dr. G. Radde in the Transcasian Region. (Ibis, July, 1890.)

Hancock, Joseph L. Anomalies in the Limbs of Aves. (North Amer. Practitioner, Sept. 1890.)

Leverkühn, Paul. (1) Kampf von Schwarzdrossel mit Reptilien. (Zool. Garten, 1890.) (2) Ueber eine alte pommersche Vogelfauna. (Zeits. für Orn. XIV, pp. 134-142.) (3) Die Legend vom Stieglilitz. (Orn. Monats. Deut. Ver. z. Schutze der Vogelwelt, xv.)

Löbell, H. v. Bericht über das Militär-Brieftaubenwesen, 1881 bis 1889. (Jahresb. ü. d. Veränd. u. Fortsch. im Militärwesen, 1889.)

Lucas, F. A. The Expedition to the Funk Island, with observations upon the History and Anatomy of the Great Auk. (Rep. Nat. Mus., 1887-88, pp. 493-529, pll. lxxi-lxxiii.)

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Pasteur, J. D. [Telegraph-poles attacked by Woodpeckers.] (Notes from the Leyden Museum, XII, pp. 209, 210.)

Ridgway, R. Observations on the Farallon Rail (*Porzana jamaicensis coturniculus* Baird). (Proc. U. S. Nat. Mus. XIII, pp. 309-311.)

Shufeldt, R. W. Contributions to the Comparative Osteology of Arctic and Subarctic Water-birds. Part VIII. (Journ. Anat. and Phys., xxv, pp. 60-77.)

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GENERAL NOTES.

Anas crecca in Connecticut.—November 14, 1889, a resident gunner brought me a fine adult male of this species, which he said he shot as it was flying with another, apparently of the same species, over an open field. It is now in the collection of Mr. John H. Sage of Portland, Conn. —WILLARD E. TREAT, *East Hartford, Conn.*

Barrow's Golden-eye (*Glaucionetta islandica*) near Washington, D. C.—A female Golden-eye, shot on the Potomac River opposite Washington, Nov. 22, 1889, by C. Herbert, was examined by Mr. Ridgway who pronounced it *G. islandica*. The specimen is now in the collection of J. D. Figgins. Besides being new to the avifauna of the District of Columbia, this record appears to extend the southern range of the species in the East about one hundred and fifty miles.—CHARLES W. RICHMOND, *Washington, D. C.*

Second Occurrence of the White-faced Glossy Ibis (*Plegadis guarauna*) in Kansas.—A young female was captured October 17, 1890, on the Arkansas River, near Wichita, and kindly sent me for identification by Dr. R. Matthews, of that city. The first specimen was shot in the fall of 1879, at a lake near Lawrence,—as reported in my 'Catalogue of the Birds of Kansas,'—and is now in the fine collection in 'Snow Hall,' at the State University.—N. S. Goss, *Topeka, Kansas.*

Phalaropes at Swampscott, Massachusetts.—The morning of Aug. 12, 1890, dawned at Swampscott, Mass., with the wind northeast and a cloudy sky. At noon the wind fell to a whole-sail breeze, tempting my brother, Dr. J. A. Jeffries, and myself to try a sail.

After standing to the east for about a mile we noticed a flock of at least three hundred birds, apparently Sandpipers, flying rapidly back and forth about half a mile in-shore of us, and an equal distance off the land. Suddenly, to our surprise, they settled on the water, and we knew they were Phalaropes, birds that appear as a rule, only in small numbers with us and not regularly. In twenty years' sailing we have not seen any in the water in our locality.

From Aug. 12 until Sept. 26 Phalaropes were seen nearly every day we went out, usually in small scattered bunches of from six to twenty birds swimming about on the water, sometimes just out of the breakers and again twelve miles off shore.

All the birds we succeeded in sailing onto were very tame, simply swimming away from our cat-boat to prevent being run down. Yet it was not always easy to take specimens, as a flock seldom remained long in one spot; rising every few minutes they would fly about, alight, and then off again before we could sail one half the distance. Sept. 9 we sailed into the

midst of a flock of several hundred birds, which chanced to settle right in front of us. They were very tame.

All birds taken previous to Sept. 26 were Northern Phalaropes, and while it is not possible to state that all the Phalaropes seen were of the same species, we can say that no individual was noticed with any specially distinct coloring to attract our attention. A single specimen of Red Phalarope was taken Sept. 26 about one mile off shore. It was swimming about alone, and on dissection proved to have been feeding on land insects, probably blown off by the stiff northwester then in full force.

What I desire to call attention to in this case is that a bird of not regular occurrence suddenly appears in large numbers, and once with us remains for six weeks.

As evidence that nearly all birds seen were included in the original flock, I would say that,—1st, the Phalaropes appeared in a flock, after a stiff although short northeast wind. 2nd, On days when many small bunches were seen, we did not see the large flock. 3rd, Birds startled did not seem to us to make any attempt to resume a flight, but simply flew off and settled down again.

Twelve or fifteen were taken, all being very fat.—W. A. JEFFRIES, *Boston, Mass.*

Golden Eagle at Shelter Island, New York.—A fine specimen of this noble bird was shot at Shelter Island Heights on the 19th of last October, and brought me to be mounted. It was a female, in young of the year plumage, and exhibited the following measurements (in inches), taken before skinning: length 36.25, extent 82.25, wing 24.87, tail 13.75, culmen 1.75, gape 2.70, tarsus 4.25. The craw and stomach contained the remains of a rabbit. The young man who shot it stated that it was in the act of swooping down upon him, being within a few yards, when he fired, and it fell dead at his feet. This is the first instance of the occurrence of this species here that has come to my notice, and it is a rare record for Long Island.—W. W. WORTHINGTON, *Shelter Island Heights, N. Y.*

Falco dominicensis Gmel. versus Falco sparveriioides Vig.—Although the very different looking birds to which the above names, in a restricted sense, respectively belong, usually have been recognized as distinct species, their specific identity was claimed on good evidence as long ago as 1855 by Dr. J. Gundlach, who then stated,* as he has subsequently on various occasions, that he found the two paired together, and undoubtedly holding the relation to one another of light and dark individual phases. Such relationship, however, seemed so improbable, that most authors (the present writer among the number) have overlooked or declined to accept Dr. Gundlach's testimony, or (as in my own case) have

* Erinn. VIII, Jahresb. Deutsch. Orn.-Gess. p. lxxxiv (Journ. für Orn. 1854, extraheft).

deferred its acceptance until the proof could be seen. Any doubts which I may have entertained in the matter have been thoroughly dispelled by a series of specimens which Dr. Gundlach has sent to the National Museum. *F. dominicensis* being the older name, *F. sparverioides* therefore becomes a synonym.—ROBERT RIDGWAY, *Washington, D. C.*

Strix pratincola again near Troy, N. Y.—On December 3, 1890, Mr. Andrew Peters, of West Troy, N. Y., found a live American Barn Owl in an old barn about a mile and a half west of the Hudson River at Troy. He shot at the bird, and it flew out of the barn and away out of sight. Crows soon found the Owl and began to mob it, so that Mr. Peters again saw and shot the bird, and thus captured it. I found that this Owl weighed 19 oz. av., including a two-ounce ball of hair and bones of mice in its stomach; and that the bird was in full flesh, not fat at all, and was a not very old female.—AUSTIN F. PARK, *Troy, N. Y.*

American Barn Owl (Strix pratincola) on Long Island, N. Y.—On the morning of Sept. 10, 1890, while at breakfast, I noticed the noisy outcries of a number of Crows. Going out to investigate, I found them congregated in a large oak tree, a number of which surround my home. Their actions indicated the presence of an enemy, for they would swoop down upon some object, rest a moment, and then fly back. I advanced to a position from which the cause of the rough cries and excited actions of the Crows was visible, immediately recognized the unusual visitor, and in a minute or two, claimed him as my own. The specimen is a light-colored male.—FRANK E. JOHNSON, *Parkville, Long Island, N. Y.*

Coccyzus americanus Breeding at Ottawa.—Last spring (1890) a pair of Yellow-billed Cuckoos built their nest in a crab tree in our garden. The male and young escaped, but the female is now in my collection.—GEO. R. WHITE, *Ottawa, Ontario.*

A new name necessary for *Selasphorus floresii* Gould.—If the so-called genus *Selasphorus* is to be considered of merely subgeneric rank, as seems to be generally admitted, a new name becomes necessary for this species, a *Trochilus floresii*, from Jamaica, having been described in 1846 by Bourcier, in the 'Revue Zoologique' for that year (1846). It would give me pleasure to name the species thus deprived of a cognomen after Mr. Gould, or some other person to whom we are specially indebted for our knowledge of the *Trochilidæ*; but unfortunately the names of such as could be properly used in connection with the present species are already attached to other species, and thus, so uncertain is the status of current genera in this family, might conflict with their use in a new connection. A descriptive name being therefore, under the circumstances, probably the best, I would rechristen it *Trochilus rubromitratus* (or *Selasphorus rubromitratus*), in allusion to its red hood.—ROBERT RIDGWAY, *Washington, D. C.*

Note on the Alleged Occurrence of *Trochilus heloisa* (Less. & De Latt.) within North American Limits.—A recent careful examination of the specimen (No. 6072, U. S. Nat. Mus., El Paso, Texas, J. H. Clark*) on which the supposed occurrence of this species within our territory is based, shows that an error has been made in its identification, it being not this species at all, but a young example of *T. calliope* Gould. Should *T. heloisa* be found within our limits, as will doubtless some time be the case, it may be expected to occur somewhere along the lower Rio Grande, since it belongs to the moister region of eastern Mexico, the fauna of which is quite distinct from that of the arid central region in which El Paso is situated.—ROBERT RIDGWAY, *Washington, D. C.*

***Scenopæetes dentiostrius*.**—A new generic name seems to be required for the Tooth-billed Bowerbird of Australia, as *Scenopæus* of Ramsay, 1875, is preoccupied in entomology by *Scenopæus*, Agassiz, 1847 (= *Scenopinus*, Latreille, 1802).—ELLIOTT COUES, *Washington, D. C.*

***Ammodramus caudacutus nelsoni* and *A. c. subvirgatus* in Connecticut.**—I have in my collection eighteen specimens of *Ammodramus* taken here between Oct. 4 and 13, 1890. Ten are true *nelsoni*, four *subvirgatus*, and the others intermediates.

They were found in the meadows near the Connecticut River, and seemed partial to certain localities. The height of the migration was apparently on the 10th of the month when thirteen were secured, two more being seen that were not captured. On other days only from one to three birds could be found.

On the day when the larger number were killed, the birds appeared somewhat stupid, flying from the thick grass when disturbed and perching on the wild oats where they remained quiet. At other times they were wild and difficult to obtain.—JNO. H. SAGE, *Portland, Conn.*

Note on *Junco hyemalis thurberi* Anthony.—A collection of birds purchased in October, 1889, by the American Museum of Natural History from Mr. E. C. Thurber, contains eleven specimens of the bird recently described by Mr. Anthony under the above name (*cf. Zoe*, I, 8, p. 238, Oct., 1890). An examination of these specimens during the past summer in connection with British Columbia material permits me to agree with Mr. Anthony as to their distinctness from the dark coast form, *Junco hyemalis oregonus*. Mr. Anthony, however, has made no comparison with a much closer ally, *Junco hyemalis shufeldti*, which differs from *oregonus* in exactly the same manner as the birds he has described as *thurberi*. While these two forms may be subspecifically separable, there

**Cf. ELLIOT*, Illustr. B. N. Am. I. pl. xxi, —COOPER, Orn. Cal. I, 1870, p. 361.—B. B. & R. Hist. N. Am. B. II, 1874, p. 465, pl. xivii, fig. 6.—A. O. U. Check-List, No. 435.

are not at present in collections enough properly prepared and unworn breeding specimens of *shufeldti* to render a comparison of their characters conclusive.—FRANK M. CHAPMAN, *American Museum of Natural History, New York City.*

Black-throated Bunting (*Spiza americana*) on Long Island, N. Y. — A young male of this species was shot at Blithewood, Long Island, on Aug. 25. The bird was in bad company when it met its fate, for it had joined a flock of English Sparrows in their depredations upon a neighboring oat-field. The specimen is a young male, the black throat indicated only by bounding streaks of that color, and a black tip here and there among the throat feathers.—FRANK E. JOHNSON, *Parkville, Long Island, N. Y.*

Breeding of Dendroica maculosa in Western Pennsylvania.—While on a collecting trip in Butler and Armstrong Counties, Pennsylvania, in May, 1889, I had the good fortune to find the Magnolia Warbler nesting. The discovery was made in the narrow valley—they are rarely a hundred feet wide—of one of the brooks emptying into Buffalo Creek, about six miles north of the town of Freeport. On May 30, while rummaging about in a bushy growth of young hemlock saplings, I found a nest placed about three feet from the ground in the midst of one of them. It was made of slender, blackish, dead twigs with fine weed-stems and horsehair for lining. On June 1 the nest contained three eggs, and on the 3d I saw the female on the nest in which now a fourth egg had been laid. She left her place, and though I waited for her to return to it, in order that I might complete the identification by shooting her as she flew from the nest, she refused to do so, and in company with her mate hovered uneasily about until nightfall. On my return early the next morning the female left the nest at my approach, and a moment later lay dead at my feet. Examining her at my leisure, I saw there was no mistake in my identification, and when later I took the precaution to compare the bird with the description in Coues's Key, it agreed in every particular.—W. E. CLYDE TODD, *Beaver, Beaver County, Penn.*

Correction.—In my 'Revised Catalogue of the Birds of Kansas' I described what I then supposed to be the nest and eggs of the Sycamore Warbler (*Dendroica dominica albilora*). I am now satisfied that the evidence is not reliable upon which the entry was based.

I have met with the birds upon several occasions in the State, during the summer months, on the banks of the Neosho River, and always in or about the large sycamore trees; but I have never been so fortunate as to find their nest, neither can I find any authentic description of their nest and eggs. They undoubtedly nest in the tree tops, like the Eastern bird, *D. dominica*. Information in regard to their nesting habits, etc., is very desirable.—N. S. GOSS, *Topeka, Kansas.*

The Mockingbird at Springfield, Massachusetts.—For the last three seasons a pair of Mockingbirds have located themselves at the same place in West Springfield. This year the male arrived from the South on the twenty-second day of April, but the female was not seen until about the first of June; they both departed early in August.—ROBERT O. MORRIS, *Springfield, Mass.*

Note on *Copsychus adamsi*—Correction.—In my list of birds from Northeastern Borneo I described as new *Copsychus adamsi*. This is apparently the same as *C. niger* Wardlaw Ramsay, Proc. Zool. Soc. 1886, p. 123, from Elopura, Northeastern Borneo, the description of which I somehow overlooked when searching that volume for new forms of *Copsychus*. Mr. Ramsay's specimen seems somewhat larger than mine, and his description is not quite as full as it might have been, but in all probability the birds are the same.

The above correction was made before the copy of 'Nature' of October 30, containing some remarks on my paper by an anonymous correspondent, was received.—D. G. ELLIOT, *Am. Mus. Nat. Hist., New York City.*

Further Cape Cod Notes.—During August and September, 1890, I made the following interesting captures near Highland Light, North Truro, Mass.

***Erismatura rubida*.**—On August 11 I found four young accompanied by the female parent on a large shallow pond which lies between the towns of Truro and Provincetown. At the approach of my boat the old bird left her young and joined five other adults which were resting upon the water half a mile away; the young ones, however, were too young to fly, and so attempted to escape by swimming and diving to the shelter of a cat-tail island near which they happened to be when surprised. Two of them reached this place of safety, but the others were secured after a troublesome chase. They were very expert divers, remaining beneath the surface for a considerable length of time, and on appearing again exposing the upper part of the head only, and that for but a few seconds. As the water just here happened to be filled with pond weed (*Potamogeton pectinatus* and *P. perfoliatus*) it was not difficult to trace the motions of the birds, when beneath the surface, by the commotion which they made in passing through the thick masses of vegetation. The flock of old birds contained at least two adult males, which were very conspicuous among their dull-colored companions. They were all very shy, so that it was impossible to approach to within less than one hundred yards of them. The adults, as well as the two remaining young, were seen afterwards on several visits to the pond.

The two taken are males. The head and greater part of the body is covered with down, but the remiges, rectrices, and scapulars are beginning to appear, as are also the true feathers along the sides of the body. No.

5056 measures: length 305, extent 254, wing 53; no. 5057: length 324, extent, 279, wing 50 mm.

In the 'American Naturalist' Vol. VII, July, 1874, Mr. Ruthven Deane writes: "On the 10th Sept., 1873, I was greatly surprised at finding two immature specimens of *Erismatura rubida* hanging up with a bunch of Winter and Summer Yellowlegs in a game stall in Quincy Market, Boston. They had been sent from Cape Cod, Mass., the day previous, where they were said to have been shot. They were apparently not more than six weeks old, and as their wings were not fledged enough to fly a rod, they undoubtedly must have been hatched in that locality. . . . I obtained one of the above specimens which is now in my cabinet and I have no doubt that these birds were taken on Cape Cod. I have seen specimens taken as far east as Niagara Falls in May; these were in high breeding plumage, though I did not learn that any nests had ever been found in that locality." This appears to be the only record of the breeding of the Ruddy Duck in Massachusetts, hence the following instances of the presence of adult birds during the breeding season in southern New England may be of interest, as they tend to show that the species may breed here more commonly than is at present supposed. In Mr. William Brewster's collection there is an adult female in worn breeding plumage taken at Rye Beach, N. H., August 22, 1879. This bird may have been a migrant, but taken in connection with the date at which I found young birds still accompanied by their parent on Cape Cod it does not seem likely that it had come from any great distance. Mr. J. M. Southwick of Providence writes me under date of October 25, 1890: "Two Ruddy Ducks at hand this past season. They were males in full plumage, received July 7 and 14 respectively. Each had been killed a few days (say one or two) previous at Seaconnet, R. I. I have another of same quality taken at same place early in July, 1889. In 1887 Dr. H. F. Marshall killed a pair, ♂ in full plumage, ♀ not so perfect. They were together, and he found no more of them. My friend Mr. Newton Dexter, who killed the last arrivals, is out of town, so I cannot substantiate my opinion, but I am quite sure that in 1889 he shot both ♂ and ♀ at about the same season." So many birds being taken in this one locality during the breeding season and in successive years, would seem to indicate that there is something more than mere accident in the occurrence, and as I understand that there is favorable breeding ground for them at Seaconnet, I have little doubt that when proper search is made, nests or young will be found there. Mr. M. Abbott Frazar informs me that he has had recently pass through his hands two adults taken during the breeding season, on the Charles River and at Wakefield, Mass., respectively.

Gallinula galeata.—Among the cat-tails bordering the pond in which the Ruddy Ducks were found this species occurred in large numbers. The pond was formerly a tide-meadow and harbor opening into Massachusetts Bay, or perhaps more properly into Provincetown Harbor, but as there was danger of the Cape wearing through at this point, the Government

about twenty years ago shut off the outlet, thus converting the harbor into a shallow pond which immediately became fresh, and as soon as the cat-tails began to grow at its margins formed a very favorable breeding ground for reed-loving birds. The proportion of cat-tails to water has been steadily increasing, so that of the total nine hundred or more acres of the original pond there must be at present at least two hundred and fifty acres of cat-tails. The open water is seldom more than four feet deep (the average depth is much less), and in the shallower parts is filled with *Potamogeton*.

The Gallinules were found in such numbers that without making any special effort in search of them from five to eight might be seen in the course of a row around the pond close to the edge of the cat-tails. This, for such a shy, retiring bird, is a large number to see in one day in Massachusetts. At almost any point where the fringe of cat-tails was more than a few yards deep, the report of a gun would immediately start the noisy and characteristic outcry of a number of individuals, scarcely any of which, however, would show themselves unless it were by accident at the edge of the cat-tails, or flying across some pool or old tide creek. Although, on account of the lateness of the season at which I visited the pond, no nests were found and the young birds taken were so fully fledged that they might have been migrants, there is but little doubt that the species breeds there. In fact a gunner who has lived for many years on the shore of the pond and who knows the birds well, tells me that the 'dippers' (*Erismatura*) and 'pond hens,' as the present species (together with *Fulica americana* which is abundant during migration) is called, first began to frequent the pond as migrants a year or two after it became fresh, and that a few years after their first appearance a few pairs remained to breed, which they have continued to do in varying but steadily increasing numbers ever since.

Lanius ludovicianus excubitorides.—A young male of this species was killed at High Land on August 22. The bird shows remnants of the first plumage on the occiput, throat, median line of belly, crissum and upper tail-coverts. This is the only one that I have seen on Cape Cod.

Icteria virens.—An adult male was found dead near one of the poles upon which the storm signals are hoisted at the U. S. Signal Station at Highland Light on the morning of September 10. As birds frequently kill themselves by flying against these poles during the night, it is probable that this one was so killed during the night of the 9th or early morning of the 10th. There was a large migration of shore birds past Highland Light on the night of September 9, *Phalaropus lobatus*, *Totanus melanoleucus*, *T. flavipes*, and *Charadrius dominicus* being common, while of *Actitis macularia*, *Calidris arenaria*, and *Oceanodroma leucorhoa* one individual each was seen. Up to midnight, when I left the light, but one land bird, a *Dendroica*, probably *D. striata*, was seen.

Mimus polyglottos.—On September 11 I saw a single bird of this species near Highland Light. The bird was very shy and I was not absolutely sure of my identification until the next day when I saw two more,

one of which I secured. Several others were seen at about the same time and place by Mr. W. M. Small of Highland Light. The specimen taken is in first plumage, though fully grown and evidently old enough to have come from some distance.—G. S. MILLER, JR., *Cambridge Mass.*

Uncommon Birds for Nantucket Island, Massachusetts.—*Ardea egretta*, AMERICAN EGRET.—On September 20, 1890, while shooting at the eastern end of this island, I saw in the distance a large white heron-like bird, which I thought might be *Ardea occidentalis*, but unfortunately I failed to secure it. The following day it was again seen, near the same locality. On September 23, 1890, this bird was shot, and I saw it; it proved to be *Ardea egretta*, and was without any plumes. This is the first record of one being taken on this island.

Mimus polyglottos. MOCKING BIRD.—On November 20, 1890, while driving on the western part of the island, and passing near a large swamp, close to which was an unoccupied farmhouse, I saw a Mocking-bird running along the ridge pole of one of the small buildings. On getting out of my wagon to secure it, the bird flew into the middle of the swamp and perched on the top of a bush in full sight. Although a very difficult matter, owing to the water, I determined to go in after it. I had just started, when the bird flew towards me and alighted on a fence post, from which I shot it. This is the *third* instance of my shooting this bird here, besides seeing another flitting among the houses in the town on August 11, 1889. These birds were all full-grown, and probably migrants, as I have never heard of their breeding on the island. They have never before to my knowledge been noted here.

Cryophilus fulicarius. RED PHALAROPE.—On October 25, 1890, a Red Phalarope (in the gray plumage) was shot near the 'No Bottom Pond,' on the outskirts of the town. Only one was seen. This is the first time to my knowledge that *C. fulicarius* has been taken here. I have in the past taken *P. lobatus* (September 20, 1870) and *P. tricolor* (August 31, 1889) on the island.—GEORGE H. MACKAY, *Nantucket, Mass.*

NOTES AND NEWS.

DR. FERDINAND KRAUSS, of Stuttgart, Germany, an Honorary Member of the American Ornithologists' Union, died Sept. 15, 1890, at the age of 78 years. He was director of the Natural History Museum of Stuttgart, and had special charge of the departments of Botany and Zoölogy. His scientific papers cover a wide field, mammals and mollusks especially, as well as birds, coming within the scope of his work.

MR. HENRY DAVIS MINOT, an Associate Member of the American Ornithologists' Union, was killed in a railroad accident near New Florence, Penn., Nov. 13, 1890, aged 31 years. Mr. Minot, born in West Roxbury, Mass., Aug. 18, 1859, was a son of William and Katherine Maria (Sedgwick) Minot, and a brother of Professor Charles Sedgwick Minot of Boston. He entered Harvard College in 1875, but owing to ill health did not graduate, leaving the college during his sophomore year. He early evinced a passionate fondness for bird life, and when but sixteen years old wrote a very creditable manual entitled 'The Land and Game Birds of New England' (Boston, 1877, 8vo., pp. 472), showing keenness of observation and originality of treatment. He also published later 'A Diary of a Bird' (April, 1880), with the humane purpose of promoting sentiment favorable to the better protection of our song-birds. He also published various minor papers, including a list of birds observed by him in Colorado (Bull. Nutt. Orn. Club, V, pp. 223-232). Of late years his attention has been devoted almost exclusively to railroad matters, in which he soon became a leading financial expert, and for the last few years has been one of the best known business men, in connection with railroad enterprises, in the Northwest, his residence being at St. Paul, Minn. Although thus deeply engrossed in business he retained a strong interest in ornithology, and was looking forward, we are informed, to a period of leisure when he could resume his favorite studies. With a high order of intellectual ability, genial, warm-hearted and sympathetic, he will be deeply mourned by all who were blest with his personal acquaintance.

THE EXHIBITION of photographs and stereopticon slides at the Eighth Congress of the A. O. U. was so far a success as to show the great interest of such exhibitions and the high importance of this class of illustrations as an aid in ornithological work. At the next Congress of the Union, to be held at the American Museum of Natural History in New York, arrangements will be made for placing the pictures on exhibition throughout the meeting, while perhaps a special evening session may be devoted to stereopticon illustrations. It is therefore hoped that during the intervening months the members of the Union will make special effort to secure photographs *from life* of as many subjects as possible, especially for the stereopticon series. The Committee of Arrangements, to whom the matter was entrusted, was much gratified by the cordial response made to the call for pictures for the Eighth Congress.

BY A VOTE of the Union the address of the Retiring President, entitled, 'The American Ornithologists' Union,—a Seven Years' Retrospect,' was ordered to be printed separately, and a copy sent to each member of the Union. The address will be ready for distribution, as a separate publication, early in the present month.

THE ACTION on the Amendments to the By-Laws of the A. O. U., proposed at the Seventh Congress and referred to the Eighth Congress, resulted as

follows: All of the proposed amendments to Article I were rejected. Article II, Section 3, was amended to read as follows:

Article II, Section 3. The Secretary shall keep a record of the meetings of the Union and Council; shall give at least three weeks' notice to Active and Associate Members of the time and place of meetings; shall report to the Council all nominations for membership received by him; and shall send to each Active Member, at least three weeks before each stated meeting, a list of the nominees for Active Membership, with a statement of the residence of each nominee and the names of the Active Members signing his nomination; and also notify them of all proposed changes in the By-Laws; shall notify Members-elect of their election and Committees of their appointment; shall acknowledge all donations to the Union, and report the same at the next Stated Meeting; and he shall have charge of the Corporate Seal of the Union.

The amendment to Article III, Section 3, making five members of the Council a quorum for the transaction of business, was adopted.

The amendment to Article IV, Section 2, was rejected.

Article IV, Section 3, was amended in the second paragraph to read as follows:

In the ballots for Vice-Presidents and for members of the Council each voter may write on one ballot as many names as there are officers to be elected, viz: two on the first ballot for Vice-Presidents and seven on the first ballot for members of the Council; and on each subsequent ballot as many names as there are persons yet to be elected; and those persons who receive the votes of a majority of the members voting shall be declared elected, provided that the number of persons receiving such majority does not exceed the number of persons to be elected, in which case the vacancies shall be filled by the candidates receiving the highest majorities.

The amendments to Article IV, Section 4, were amended and referred to the next Congress for final action.

The amendment to Article IV, Section 8, was rejected.

The amendments to Article VIII were amended and referred to the next Congress for final action.

Rule VIII of the By-Laws and Rules was amended to read as follows:

Rule VIII. The printing for the Union shall be under the direction of the President, the Secretary, the Editor of 'The Auk', and four other members of the Council, and these seven shall constitute a Committee of Publication.

DR. C. HART MERRIAM, Chief of the Division of Ornithology and Mammalogy of the U. S. Department of Agriculture, will this year make a detailed biological survey of one of the least known, most interesting and inaccessible regions of the United States. On Jan. 1, 1891, a party under the leadership of Mr. T. S. Palmer, began an exploration of that particular portion of the desert region of southeastern California known as Death Valley, which can be entered only in the winter season, and

then only with great risk to the explorer, owing to the total absence of potable water for long distances. The party is expected to occupy the field for at least eight months, extending the survey over a considerable area of contiguous country, including the Mount Whitney region at the westward. The party is especially equipped for the trying work before it, every precaution being taken to guard against undue risk, and to secure the best results. In personnel and outfit, no party was ever better prepared for systematic field work in biology. The scientific staff will include, in addition to Mr. Palmer, Dr. A. K. Fisher, Mr. Vernon Bailey, Mr. E. W. Nelson, and Mr. F. Stephens, as zoölogists—all trained experts in this line of research. Prof. F. W. Coville, of the Botanical Division of the Department of Agriculture, has been detailed to accompany the expedition as botanist. A topographer accompanies the party for the purpose of running contour lines and determining with precision the altitudes of the life zones. Dr. Merriam, with other assistants, will join the expedition later, when the party will number not less than ten, exclusive of cooks and packers. It is expected that an area of not less than 30,000 square miles will be mapped, on a scale of four miles to the inch, with contour lines for every 100 feet. A portion of the region is depressed from 200 to 300 feet below sea level. Under all these conditions the results cannot fail to be of the utmost interest.

DR. EDGAR A. MEARNs, U. S. A., proposes to make a critical study of the Sparrow Hawks (the *Falco sparverius* group) and the Snipes (*Gallinago delicata*) of North America, and for this purpose solicits the loan of material for use in these investigations. Due credit will be given for aid thus rendered, and the specimens returned to the owners at the earliest practicable moment. The packages should be addressed, Dr. Edgar A. Mearns, Capt. Medical Department, U. S. A., Fort Snelling, Minn.

MR. J. A. ALLEN desires to make a careful investigation of the relationships of the various North American forms of the genus *Colaptes*, and solicits the loan of material for examination. Large series of specimens representing, respectively, *C. chrysoides*, *C. cafer*, *C. cafer saturator*, *C. mexicanoides*, and *C. ruficapileus* are especially desired. Also, *C. auratus* from any point west of the Mississippi River, or any specimens from the East showing any departures from the typical phase of the species.

Specimens may be forwarded at any time prior to November 1, 1891; but as many as possible should be in hand by October 1, in order that a report on the material, with an exhibition of specimens, may be presented at the next A. O. U. Congress, immediately after which the material will be returned to the owners. The packages should be addressed to Mr. Allen, American Museum of Natural History, 77th St. and 8th Ave., New York City.

AT THE late meeting of the American Association for the Advancement of Science, a formal organization was effected, by the ornithologists in attendance, of a 'Sectional Club' to be accessory to the A. A. A. S.

According to previous arrangements several papers had been prepared upon special topics. Among them may be mentioned one by Mr. Lynds Jones, of Iowa, on the Meadow Lark; by Mr. Widmann on the Orchard Oriole; by Messrs Butler and Everman upon the Baltimore Oriole. Prof. Steere, of Michigan, gave an extended account of the birds of the Philippine Islands, based upon observation made there during a series of years. A number of specimens were exhibited illustrating certain theories of coloration and distribution. Mr. Butler presented notes upon the distribution of the Evening Grosbeak. Prof. Osborn, of Iowa, spoke upon parasites of birds. From his observation he inferred that few of these actually feed upon the blood of their host, most of them subsisting upon feathers, hairs, etc.

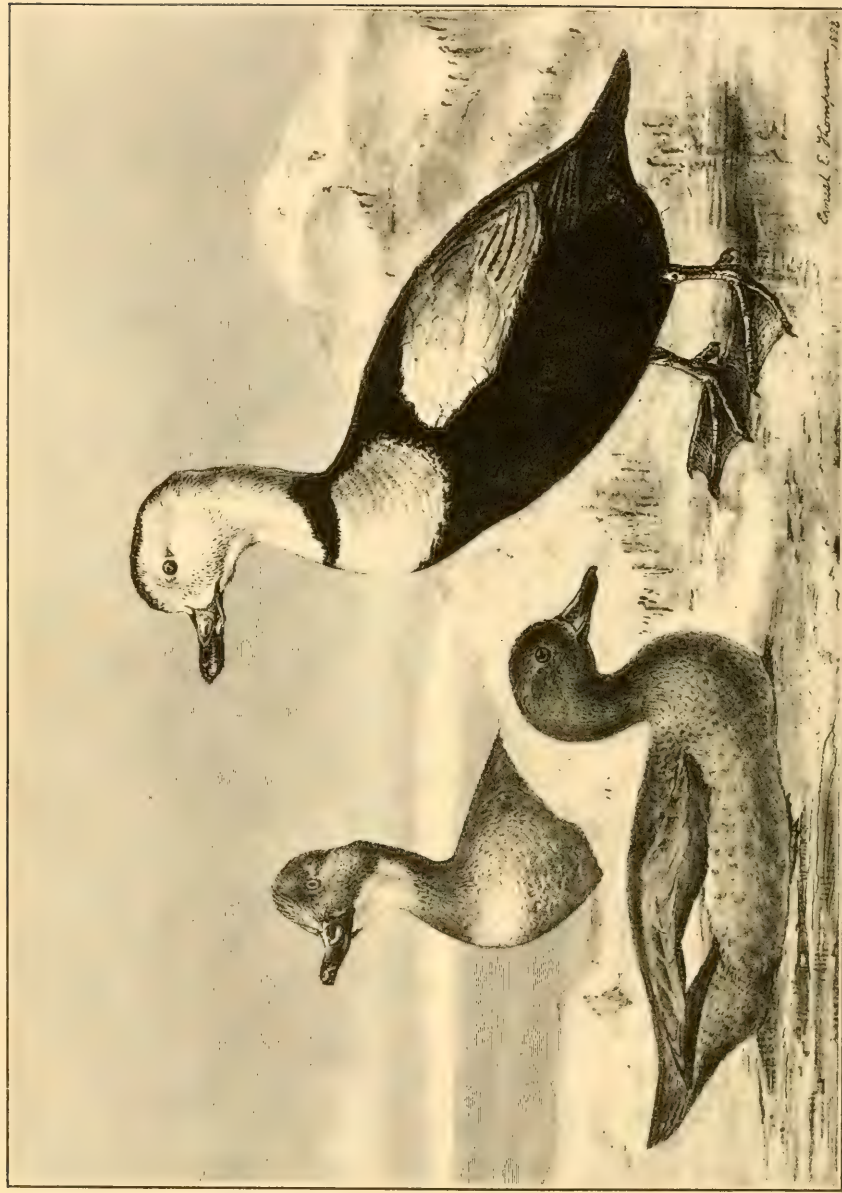
The following officers were elected for the coming year: President, A. W. Butler, Brookville, Ind.; Secretary, Charles W. Hargitt, Oxford, Ohio; Treasurer, Otto Widmann, Old Orchard, Mo.; Executive Committee: Messrs. Evermann and Osborn, together with the foregoing officers.

Another meeting will be held at the time of that of the American Association next year, at Washington, D. C.

D. H. TALBOT, of Sioux City, Iowa, well known as a collector and naturalist, has recently presented to the Iowa State University his entire scientific collections and library. The natural history collections will be at once transferred to the University, but the library he will reserve till his death. The collections represent a wide range of subjects, including minerals as well as every department of zoölogy. The collection of birds is especially interesting and valuable.

MR. W. E. D. SCOTT, sailed for Jamaica, W. I., early in November last, for the purpose of spending six months collecting and studying the birds of the island. Late advices announce his safe arrival, and that he finds the outlook favorable for successful work.

ATTENTION is called to the change of address of the Treasurer, Mr. William Dutcher, which will be, after January 1, 1891, **No 525 Manhattan Avenue**, New York City. Members remitting by post office orders will please make them payable at **Station J**, New York City.



CAMPTOLAIMUS LABRADORIUS (GMEL.). LABRADOR DUCK.

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NOTES ON THE BIRDS OF THE LOWER SUWANEE RIVER.

BY WILLIAM BREWSTER AND FRANK M. CHAPMAN.

MARCH 11, 1890, accompanied by Dr. C. Slover Allen of New York City, Mr. Chapman left Branford on the Suwanee River bound for the Gulf, a distance, by way of the river, of 120 miles. March 19 Mr. Brewster joined the party; the mouth of the river was reached March 26, and the trip concluded April 1.

In so hurried a journey through a densely wooded region anything like thorough investigation was, of course, out of the question. Previous experiences in Florida, however, had made us familiar with the habits of many of the birds observed, while the size of our party, there being two hunters in addition to ourselves, permitted us to gain through our joint efforts a fair idea of the general character of the avifauna at this season.

Mr. Du Bose, one of the hunters alluded to, deserves as assistant more than passing mention. Rarely have we met a plain backwoodsman who had given such close and intelligent attention to the habits of the birds and beasts among which his life was passed. Conservative in his statements, on no occasion could we question his evident accuracy, and in several instances we were astonished at the extent of his original knowledge. We say this concerning Mr. Du Bose not only as evidence of

his value in the field, but also to call attention to an inborn love of nature, and especially of bird life, in a man to whom at the age of forty, the word 'ornithology' possessed no meaning. Mr. Du Bose was with us until March 23.

Our means of transport proving eminently successful deserves some description. It was originally a 'flat' or scow thirty feet in length and eight feet in width. A cabin, seventeen feet in length and divided by partitions into kitchen, berth-room and specimen-room, was placed on this foundation somewhat astern.

The specimen-room was provided with numerous shelves, as indeed was every available corner, for use in drying specimens and storing the supplies incident to collecting. The bow was protected by an awning, and, serving as dining or work room, proved also an admirable observation post where, while under way, one might prepare specimens and still maintain a constant outlook on the river ahead, or on either shore. A three-mile current and the use of oars by the men, gave sufficient speed for our purpose, while the three canoes floating astern, afforded a more rapid and easy means of reaching a desired point whenever occasion demanded.

It is not our purpose to give in detail the results of our explorations. Beyond ascertaining that the river apparently constitutes one of the highways of migration for Bachman's Warbler (*cf.* Brewster, *Auk*, VIII, 1891, p. 149), hitherto unknown from the mainland of Florida, we did not discover any facts of startling importance. It is our object, therefore, to present as briefly as possible the characteristic features of the bird life of the region—an unwritten chapter in the history of the Florida fauna.

The river averaged from fifty to one hundred yards in width during the greater part of the voyage and in fact until we had approached to within a few miles of the Gulf. The whole country was heavily and continuously wooded; the total frontage of the clearings on either shore from Branford to the marshes of the Gulf would not exceed a mile in length. The higher, drier banks supported a heavy 'hummock' growth composed largely of live and water oaks, bay, magnolia, red birch, red maple, sweet gum, and a rather dense undergrowth. Occasionally higher pine-grown bluffs intervened, or, where the shores were lower, great forests of cypresses outlined their delicate, lace-like foliage of softest green against the sky. Frequently, through the action of

the current, the banks were higher than the ground immediately adjoining them and the 'hummock' growth of the shores was flanked by extensive cypress swamps or sloughs running more or less parallel to the river's course.

For the first two weeks we collected largely in localities of this nature. Here, in the lower growth, Cardinals, Tufted Tits, and Carolina Wrens were abundant, and with them were associated Brown Thrashers and Red-eyed Towhees. The first three species were preëminently the song birds of the region, and their combined voices at daybreak and in the late afternoon rang out in a chorus which formed a vocal background for all other bird music. It was rather surprising to meet here also large flocks of Goldfinches. The most common Woodpeckers were the Pileated and Red-bellied; the former was slightly more numerous than the latter, and it was not unusual to see eight or ten individuals in one day. The long rolling call of this species is well known to resemble the call of the Highhole, although louder, less rapid, and more prolonged, and the similarity in their notes was further noticed when on one occasion two birds on coming together gave utterance to the *whicker* calls so characteristic of *Colaptes*.

Troops of exceedingly tame and noisy Blue Jays roved through these woods, producing such a variety of strange, odd calls and cries that, when surrounded by them and the object of their curiosity, one could readily imagine oneself in an aviary. But our interest centred in the loose flocks of passing migrants, which, travelling ever northward, found in these wooded shores a natural pathway for migration. At least one half of each flock was composed of Parula Warblers; Yellow-rumped and Yellow-throated Warblers and Ruby-crowned Kinglets were about one third as numerous, while Blue-gray Gnatcatchers, Black-and-white Creepers, Bachman's Warblers, Red-eyed and Solitary Vireos, Orange-crowned Warblers and Yellow-throated Vireos were represented in about the order named. As migrants these birds differed decidedly from somewhat similarly composed groups found at the north in the month of May. They travelled very rapidly and usually, even during strong winds, remained in the tops of the higher trees. For these reasons it was by no means an easy task to identify, collect, and at the same time keep pace with them.

Where pine-clad bluffs reached the river the character of the bird life changed with the vegetation. In the palmetto scrub were Yellowthroats (*Geothlypis*) and White-eyed Towhees, or where turkey oaks formed the undergrowth, sweet-voiced Pine-woods Sparrows, Palm, and Yellow Palm Warblers were common, while Red-cockaded Woodpeckers, Loggerhead Shrikes, Pine Warblers, and Bluebirds were generally distributed throughout the pines.

Early on the morning of March 21, while hunting in the pines we heard in the distance the vigorous squawking of young Herons. Following the direction whence the sound proceeded we found, half a mile from the river, a rookery of Ward's Herons situated in a series of shallow, grassy ponds which extended over a considerable area. Stunted cypress trees, growing singly or in groups, were scattered around the shores of these ponds or were well out in the water. Most of the water-surrounded trees held nests, large structures of sticks, some placed in the tops of the trees, others on their lateral branches. Usually there was only one nest in a tree but in several instances we noticed two or three. As a rule we found three or four young Herons in each nest, most of them well grown and fully feathered. A few young birds were already on the wing. Those in the nests stood erect on the framework of twigs, or, in some cases, on the neighboring branches, but as soon as they saw us and suspected danger they sought concealment, squatting low in the nest and remaining perfectly still as long as we were near them. After we had retired a few hundred yards, they arose again and began calling for food, making a peculiar, loud, hollow, croaking sound. Swinging from the branches near the edge of a nest holding three nearly grown young, was a bird in the last stages of decay, which had died at about the age of one week.

On the river bird life was not abundant. This was not due to man's presence—we saw less than a dozen cabins from Branford to Fort Fannin which, with Oldtown landing, is the only settlement on the river's banks—but rather to the unusual depth of the water near the banks which descended so abruptly as to leave few shoals where water birds could find feeding grounds. Thus Coots (*Fulica*) and Scaup Ducks (*Aythya affinis*), generally so numerous on the larger and more shallow Florida rivers, were here so nearly wanting that we observed only a single individual of each species.

Throughout the day two or three Water Turkeys were usually in sight, always keeping a safe distance from us, either by short flights, or, when the limit of their wanderings was apparently reached, by soaring high in the air and returning to the vicinity of their starting point. Wary Kingfishers darted out from the shore and with rattling call flew on ahead, or, by wide detours, made their escape up the river. Occasional Herons,—Ward's, Green, and Little Blue, the last most common,—started from their posts, winged their way low over the water and passed out of sight around some protecting bend, only to repeat this as we approached them again.

Flocks of fifty to one hundred Black Vultures and Turkey Buzzards were sometimes seen perched in silence on the bare limbs of a dead and leafless tree, or feasting on dead cows or hogs which were stranded on snags near the river's banks. There is little good feeling lost between these two species. They apparently do not roost together, and quarrel continually when feeding, the greater weight of *Catharista* generally turning the tide of battle in its favor.

The screaming of Red-shouldered Hawks was constantly in our ears and the birds could be seen circling high over the forests. Graceful, swift, and sure of flight, the few Swallow-tailed Kites observed claimed our attention as long as they remained in sight. On firm wing leisurely they passed over the tree-tops, making sudden downward dashes at some unfortunate lizard sunning himself in fancied security below. But the birds which more than any other species gave life and character to the river were the Wood Ducks, and their sharp, whistling call gave frequent notice of their presence as, surprised by our appearance, they sought safety in rapid flight. They were common along the entire course of the river to within two or three miles of its mouth as well as throughout all the connecting creeks. On the creeks they were as a rule found in pairs, but on the river it was not unusual to see small flocks containing from three to ten individuals. A bird killed March 14 had an egg in the oviduct ready for the shell, from which we inferred that the nesting season was at hand. On several occasions when they discovered us from a long distance they swam ashore and ran off into the woods. At nightfall these Ducks left the river and roosted in the small ponds or cypress sloughs of the forest,

A regular flight of Little Blue Herons, with a few Louisiana Herons, began about half an hour before, and continued until a short time after, sunset. The birds flew down the stream in flocks of from five or six to fifty or seventy-five individuals each, moving in compact bodies and usually about on a level with the tops of the trees. We found the objective point of this flight to be a small treeless island covered with marsh grass, near the mouth of the river. Here on the evening of March 30, we saw fully five hundred of these birds come in and pitch down into the grass. There were also a few large Egrets among them. There was nothing to distinguish this island from apparently similar ones near by, but it was evident from the signs we found there that the birds had made it their roosting place for a long time.

Flocks of from twenty to one hundred and fifty White Ibises were not infrequently observed during the earlier part of the voyage. The birds appeared after the flight of Herons had ceased and followed the course of the river either north or south evidently *en route* to a rookery. This species was less common on the lower river, indeed we observed only one flock of about thirty birds which, at eight o'clock on the evening of March 30, passed low over our canoes with a sudden rush of wings, their snowy plumage glistening in the moonlight. A few seconds later apparently the same flock passed us retracing its course.

The nights on the river were more quiet than we had expected to find them. When moored beneath overhanging oaks, where in the early morning and late afternoon the choking bark of the always abundant gray squirrels could be heard, we frequently detected in the evening the fine, high, squeaky note of flying squirrels. On the lower river at times a sudden chorus of frogs abruptly broke the stillness and as abruptly ceased, but without the Barred Owls there would have been little to interest us during the night. These Owls although abundant along the whole course of the river, were less numerous towards its mouth than in the heavily timbered bottoms above. We heard them every night and rarely failed to see one or two by daylight when we were in the woods. They hooted most freely from a short time after sunset until about eight o'clock in the evening, after which hour they were not often heard until near morning, except during moonlight nights when they hooted at all hours. It was by no means uncommon to hear them during the daytime, and on

the brightest days occasionally they might be heard at noon. They invariably responded to an imitation of their calls, and after a short time would come into the trees directly over our boat, on several occasions descending to within fifteen or twenty feet of us, where in the light of the cabin we must have been plainly visible to them. This familiarity gave us an excellent opportunity to study their calls and actions. The customary call of *whōō-whōō*, *whō-whōō*, *tō-whōō-ah*, was varied both as to relative position and length of syllables, by the same individuals, and was apparently the cry of question and response; but when two birds, perhaps rival males, came together, there ensued a striking medley of sonorous *wha-whas* mingled with rolling *whōō-ahs*, the whole bearing an odd resemblance to deep-voiced, mirthless laughter. A singular concerted performance was frequently heard and was always indulged in by two birds, one of which gave utterance to about ten rapid hoots all on the same note and ending with a *whōō-ah*, while the other, in a slightly higher tone, at once joined in and, calling half as fast, uttered about five hoots and a *whōō-ah*, both performers concluding together. On one occasion we were fairly startled by a note new to us, a single, prolonged, weird, gasping shriek, emphasized at its conclusion like a cry of distress. We rarely heard this call; probably a high degree of excitement was required to produce it. One night we threw the light of a jack-lamp full upon a bird as, perched above us, he gave the customary *whōō-whōō* call. He sat in the usual crouching position and did not move perceptibly while uttering the sound.

As we approached the mouth of the river, and while still some fifteen miles from the Gulf, there occurred a marked change in the character of the shores. The high hummock-grown banks and pine-bluffs were now left behind us and in their place appeared comparatively dwarfed forests composed largely of cypresses and bays with a mixture of cabbage palms, red maples and sweet gums. At more or less frequent intervals there were open savannas of varying extent. The banks were low, and at high tide scarcely observable, the water passing over them and flooding the cypress swamps beyond. The bird life of the river was affected by this change in the nature of the region and also by our proximity to the Gulf. Swallow-tailed Kites were no longer observed and Wood Ducks became comparatively rare.

Fish Hawks, before uncommon, were now numerous. Cormorants were occasionally seen. Where narrow marshes bordered the shores, Red-winged Blackbirds were common, and several Boat-tailed Grackles were observed. Each evening flocks of White-bellied Swallows with a few Bank Swallows were observed flying down the river, probably to a roost in the marshes below.

While the forests were now less easily penetrated by foot, the constantly increasing number of small inflowing creeks afforded us a far more delightful means of exploring their recesses. No experience on the Suwanee will be recalled with more pleasure than our journeys up these mysterious little branches. In our light canoes we could follow their course for miles and each turn seemed to bring us nearer to the heart of nature. Rarely was there evidence that man had preceded us. The larger trees interlocked their branches above us forming a leafy dome beneath which the light was dim and subdued even at midday. Paddling silently through these shaded aisles we felt in perfect harmony with our surroundings. Occasional alligators, unalarmed by our noiseless approach, slid clumsily into the water almost at our bows; rows of turtles tumbled off their favorite logs with a splash into the water; rarely a snake glided from the banks. Where bushes hung low over the stream Prothonotary Warblers could be seen, their yellow heads gleaming like gold among the foliage or showing in strong contrast against the dark water. This species and the Yellow-throated Warbler, both because of the later date and of the difference in the vegetation, were more numerous than we had before found them. But we did not meet here the large mixed flocks of migratory Warblers so common further up the river. The two birds just mentioned and Parula Warblers in reduced numbers were the characteristic species.

So far as birds are concerned, however, these creeks will ever be associated in our minds with Yellow-crowned Night Herons. This Heron was found sparingly along the entire course of the river, but was common only in these small inflowing streams. Where the arching trees secluded the light we were almost certain to find them. They never congregated in colonies but it was by no means uncommon to start two or three pairs within a distance of as many hundred yards when the conditions were particularly favorable. Their nests were easily discovered, for they were almost

invariably placed in conspicuous positions near the ends of long horizontal branches directly over the water. Several that we examined were empty. A bird was sitting on one of them and the ovaries of specimens killed at this time indicated that most of them would have begun laying in a week or ten days. As a rule these birds were not shy, with a little caution one could always approach within gunshot, and indeed on several occasions we floated by individuals without disturbing them. One evening, as the light was failing fast, three birds allowed us to pass within a few yards of them as they sat perched on dead branches over the water. At each movement on our part they would raise and lower the long occipital plumes with a quick nervous motion.

The shores of the Gulf, both at the East and West Passes of the river, were a great disappointment to us, for we had hoped to find shore birds abundant there. Two or three miles from the mouth of the river the forest growth ceases and is succeeded by a vast expanse of grass-grown marshes which, broken only by occasional groups of cabbage palms, extend to the Gulf. Here there was no beach nor surf, the tall grasses growing out into the water even at low tide. This is probably due to the protection afforded by the great stretch of shoal water which thirty miles from the shore reaches a depth of only nine fathoms.

As we found it, the water was fresh at the mouth of the river, and as far out in the Gulf as we went, a distance of about one hundred yards; under the influence of inflowing tides and westerly winds it may at times be salt. This fact would cause an absence of both the fluviatile and marine life which serves as food for shore and sea birds, and in connection with the character of the coast may account for the remarkable scarcity of bird life. During our three visits to the Gulf, from our headquarters farther up the river, we saw or heard one Willet, one Greater Yellowlegs, two Brown Pelicans and about a dozen Florida Cormorants. Not a single Gull or Tern was observed.

The marshes, however, in part redeemed what was an otherwise apparently deserted region. In them we found a few Long-billed Marsh Wrens,—the one specimen obtained was *C. palustris*,—several Short-billed Marsh Wrens, and a number of Swamp Sparrows. One Sea-side Finch was observed, but not secured, and we are in doubt, therefore, as to whether it was *maritimus* or *peninsulæ*. The most common and characteristic birds, however, were the Clapper Rails (*Rallus scottii*).

The marshes and small islands at the mouth of the river were covered with a tall grass each blade of which ended in a very sharp point or spine. Beneath the upright grass there was a mat of dead grass representing probably the growth of previous years. This formed a dense mass a foot or more in thickness and raised fifteen or twenty inches above the ground. Beneath this mat the Rails had their runways from which it was almost impossible to dislodge them. At intervals of fifteen or twenty minutes one would call out when another would answer, and then still another, until the call was taken up by dozens of birds in succession. We did not observe that these outcries were at all stimulated or excited by any sudden noise, such as the report of a gun, as in the case with the Carolina Rail. After a vain attempt to flush these birds by wading in the marshes, we were obliged to resort to firing the islands in order to obtain specimens. By lighting the grass at different points simultaneously we managed to start several fires of such extent that they swept nearly the entire island over which they raged. The Rails, as a rule, kept about one hundred yards ahead of the fire, showing themselves now and then along the edges of the water and occasionally taking short flights. They were very shy, however, and seemed to fear us quite as much as they did the fire, for in several cases they turned back the moment they discovered us. Some of them escaped by long flights across the channels between the islands. One bird flew directly out over the river and alighting in deep water swam easily and swiftly like a Duck. Many birds eluded us without showing themselves, keeping in the dense green grass just back from the water's edge where the tide made everything too wet for the fire to take effect.

We conclude this sketch of the avifauna of the region with brief notes on the migration, technical remarks on several species, and a nominal list of all the birds observed.

THE MIGRATION ON THE SUWANEE.

During our stay on the river the migration of birds was marked with unusual distinctness for the interior of Florida. A cold wave on March 16-17 had an evident effect in checking the northward movement which was apparently well under way before we started. The presence in Florida as winter residents of many spe-

cies which also as transients pass through the State on their return from the tropics, renders it impossible to ascertain with accuracy the date of their first appearance as migrants. We give here, therefore, only a list of those species which probably do not winter in the region, arranged according to the date of their arrival. After reaching the mouth of the river on March 26, our opportunities for observing the migration were less favorable.

- March 12. *Helminthophila bachmani*.
 " 12. *Antrostomus carolinensis*.
 " 14. *Vireo flavifrons*.
 " 20. *V. olivaceus*.
 " 20. *Tyrannus tyrannus*.
 " 21. *Seiurus noveboracensis notabilis*.
 " 22. *Protonotaria citrea*.
 " 22. *Helinaia swainsoni*.
 " 22. *Setophaga ruticilla*.
 " 22. *Chætura pelagica*.
 " 23. *Myiarchus crinitus*.
 " 26. *Clivicola riparia*.
 " 30. *Sylvania mitrata*.
 " 31. *Piranga rubra*.

TECHNICAL REMARKS.

Ardea wardi. WARD'S HERON.—We are not prepared on the present occasion to discuss the relationships of this Heron. As a slight contribution to a final study of the group to which it belongs, we merely give the measurements in inches, of the two breeding birds procured, with the statement that they apparently agree in coloration with two specimens from Tarpon Springs. The measurements of a young bird evidently about ready to leave the nest are also given.

		Wing	Tarsus	Exposed culmen
Am. Mus. No.	49,599, ♂ ad.	19.50	8.25	6.30
" "	" 49,598, ♂ ad.	19.75	8.00	6.10
" "	" 49,597, ♂ juv.	15.50	7.00	4.90

Rallus scottii. SCOTT'S RAIL.—Although the nine specimens which we collected differ very considerably *inter se* in respect to the width and color of the light edging of the dorsal feathers and secondaries, and still more decidedly in the general coloring of the under parts, there is not a bird among them which cannot be closely matched by one or more of the eight examples of *scottii* taken at Tarpon Springs by Mr. Scott, with which we have compared them. In short, the Suwanee birds are evidently all true *scottii*. The remarkable variations of coloring which

occur in this form have been so fully described by Mr. Scott* that it is unnecessary to particularize them here, but we must express our dissent from Mr Sennett's† opinion that *scottii* is specifically distinct from both *crepitans* and *saturatus* and that the latter is most closely allied to *crepitans*. It is true that our material is much less extensive than was Mr. Sennett's but nevertheless it is sufficient to furnish good grounds for believing that these three forms intergrade and that *saturatus* is much nearer to *scottii* than it is to *crepitans*. The extreme dark phase of *scottii* is certainly very unlike typical *crepitans*, but in a large series of the latter from St. Mary's, Georgia, we find several birds taken late in March (and hence not long before the beginning of the breeding season) which incline sufficiently towards the grayer examples of *scottii* to suggest the probability of complete intergradation at points where the two forms meet.

Of *saturatus* we have only a single representative but this, according to Mr. Sennett (who has compared the three), is in every way similar to Mr. Henshaw's types (which are now in the British Museum). It differs very decidedly from the grayer specimens of *scottii*, less markedly but still quite appreciably from the blacker ones, and only *very* slightly from the brownest examples of that form. Indeed several of the latter resemble it much more closely than they resemble the gray extremes of their own subspecies. As the black, gray, and brown phases are all represented among breeding birds taken by us in one day and in the same marshes it follows that these phases cannot be regarded as seasonal or connected respectively in any way with different conditions of environment, but that they must express either age or individual variation. If, as seems not improbable, *saturatus* proves to vary to a similar degree and along corresponding lines, it will certainly be a matter of much difficulty to distinguish it from *scottii*. As the matter stands, however, we do not as yet know much about *saturatus*.

Meleagris gallopavo. WILD TURKEY.—On the evening of March 15, a flock of six Wild Turkeys flew across the river about one hundred yards ahead of us. These were the only ones observed and not more than four others were heard. It is probable they are more common further back from the river.

Campephilus principalis. IVORY-BILLED WOODPECKER.—An adult male was shot March 24, in a cypress swamp on the river's banks, about twenty miles from the Gulf. This and an individual heard March 29, further down the river, were the only birds of this species encountered, and information we received from a resident of the region, who was evidently reliable, led us to believe that the bird is rare.

Note on *Conurus carolinensis*.—Through lack of definite information it has generally been supposed that Paroquets are still found in the cypress swamps of the lower Suwanee. The inhabitant above quoted,

*Auk, VI, April, 1889, pp. 154-155.

†Ibid., pp. 161-166.

who has lived in the region for over twenty years, told us he had seen none of these birds for eight or nine years.

Spinus pinus. PINE SISKIN.—March 26 Mr. Brewster heard and saw a single individual of this species. Mr. Chapman has heard the species on several occasions at Gainesville, Florida, during previous winters, and these records are supported by his capture there of a male specimen on February 15, 1890.

This species has been recorded from the State but once before. (*Cf.* Maynard, *Birds Eastern North America*, p. 92.)

Helinaia swainsonii. SWAINSON'S WARBLER.—Two males were taken in a large, gloomy cypress swamp on March 22. These birds, the only ones observed, were silent.

Troglodytes hiemalis. WINTER WREN.—Two birds of this species were observed and one was secured. This is apparently the most southern point from which it has been recorded in the Atlantic States.

Regulus satrapa. GOLDEN-CROWNED KINGLET.—One example was taken March 14 and one noted March 21. Mr. Brewster has observed a few individuals of this species at Tallahassee in March, but Mr. Chapman has not met with it at Gainesville.

LIST OF BIRDS OBSERVED ON THE SUWANEE RIVER BETWEEN BRANFORD AND THE GULF FROM MARCH 11 TO APRIL 1, 1890.

(The asterisk indicates that specimens were secured.)

- | | |
|-----------------------------|--------------------------------|
| *1. Podilymbus podiceps. | 21. Rallus virginianus. |
| *2. Anhinga anhinga. | *22. Fulica americana. |
| *3. Phalacrocorax dilophus | *23. Gallinago delicata. |
| floridanus. | 24. Totanus melanoleucus. |
| 4. Pelecanus fuscus. | 25. " solitarius. |
| 5. Anas (fulvigula?). | 26. Symphemia semipalmata. |
| 6. " americana. | 27. Actitis macularia. |
| 7. Spatula clypeata. | 28. Meleagris gallopavo. |
| *8. Aix sponsa. | 29. Zenaidura macroura. |
| 9. Aythya affinis. | *30. Columbigena passerina. |
| *10. Guara alba. | *31. Cathartes aura. |
| *11. Ardea wardi. | *32. Catharista atrata. |
| *12. " egretta. | 33. Elanoides forficatus. |
| 13. " candidissima. | 34. Accipiter velox. |
| *14. " tricolor ruficollis. | 35. Buteo borealis. |
| *15. " cærulea. | 36. Buteo lineatus. |
| *16. " virescens. | 37. Haliaeetus leucocephalus. |
| 17. Nycticorax nycticorax | 38. Pandion haliaëtus carolin- |
| nævus. | ensis. |
| *18. Nycticorax violaceus. | *39. Syrniun nebulosum alleni. |
| 19. Grus mexicana. | 40. Ceryle alcyon. |
| *20. Rallus scottii. | *41. Campephilus principalis, |

- *42. *Dryobates villosus audubonii*.
 43. *Dryobates pubescens*.
 44. " *borealis*.
 *45. *Sphyrapicus varius*.
 *46. *Ceophælus pileatus*.
 *47. *Melanerpes erythrocephalus*.
 *48. *Melanerpes carolinus*.
 *49. *Colaptes auratus*.
 50. *Antrostomus carolinensis*.
 51. *Chætura pelegica*.
 *52. *Trochilus colubris*.
 *53. *Tyrannus tyrannus*.
 54. *Myiarchus crinitus*.
 55. *Sayornis phœbe*.
 56. *Cyanocitta cristata floridcola*.
 57. *Corvus americanus* (floridanus?).
 58. *Molothrus ater*.
 *59. *Agelaius phœniceus*.
 60. *Sturnella magna* (mexicana?).
 *61. *Scolecophagus carolinus*.
 *62. *Quiscalus quiscula aglæus*.
 63. *Quiscalus major*.
 *64. *Spinus tristis*.
 65. " *pinus*.
 66. *Ammodramus maritimus* (peninsulæ?).
 *67. *Peucæa æstivalis*.
 *68. *Melospiza georgiana*.
 *69. *Pipilo erythrophthalmus*.
 70. " " *alleni*.
 *71. *Cardinalis cardinalis*.
 72. *Piranga rubra*.
 73. *Progne subis*.
 74. *Tachycineta bicolor*.
 75. *Clivicola riparia*.
 76. *Ampelis cedrorum*.
 77. *Lanius ludovicianus*.
 *78. *Vireo olivaceus*.
 *79. " *flavifrons*.
 *80. " *solitarius*.
 *81. " *noveboracensis*.
 *82. *Mniotilta varia*.
 *83. *Protonotaria citrea*.
 *84. *Helinaia swainsonii*.
 *85. *Helminthophila bachmani*.
 *86. " *celata*.
 *87. *Compsothlypis americana*.
 *88. *Dendroica coronata*.
 *89. " *dominica*.
 *90. " *vigorsii*.
 *91. " *palmarum*.
 92. " *palmarum hypochrysea*.
 *93. *Dendroica discolor*.
 *94. *Seiurus aurocapillus*.
 *95. " *noveboracensis notabilis*.
 *96. *Seiurus motacilla*.
 *97. *Geothlypis trichas*.
 98. *Sylvania mitrata*.
 99. *Setophaga ruticilla*.
 100. *Mimus polyglottos*.
 101. *Galeoscoptes carolinensis*.
 102. *Harpophynchus rufus*.
 *103. *Thryothorus ludovicianus*.
 *104. *Troglodytes hiemalis*.
 *105. *Cistothorus stellaris*.
 *106. " *palustris*.
 107. *Sitta carolinensis* (atkinsi?).
 108. *Sitta pusilla*.
 *109. *Parus bicolor*.
 *110. " *carolinensis*.
 *111. *Regulus satrapa*.
 *112. " *calendula*.
 *113. *Poliophtila cærulea*.
 114. *Turdus aonalaschæ pallasi*.
 115. *Merula migratoria*.
 *116. *Sialia sialis*.

DESCRIPTIONS OF SEVEN SUPPOSED NEW NORTH AMERICAN BIRDS.*

BY WILLIAM BREWSTER.

Megascops asio aikenii,† new subspecies. AIKEN'S SCREECH OWL.

SUBSPEC. CHAR. — Of about the size of *M. bendirei*, with the ground color more ashy; the dark markings coarser, and more numerous and conspicuous, than in any other North American member of the genus.

Female ad. (No. 7503, collection of William Brewster, El Paso County, Colorado, May 29, 1872; C. E. Aiken).— Ground color of both upper and lower parts plain ash-gray; the legs, flanks, under tail-coverts, crown, and back and sides of neck, white, mixed with gray on the crown and faintly tinged with dull vinaceous on the scapulars and back; outer edges of outer scapulars and wing-coverts pure white, the former narrowly tipped and margined with black; the usual light spots and bars on primaries and secondaries whiter than in most members of the genus but not as conspicuous as in *M. maxwelliæ*; tail obscurely banded with ashy or rusty white; feathers of the face with numerous fine bars of reddish brown; lores and superciliary region soiled white, the shafts and tips of most of the feathers black or dark brown; wing-coverts, scapulars, top of head, hind neck, back, breast, sides, and abdomen with broad, coarse, mesial streaks and stripes of dull black, these very conspicuous everywhere but most so on the top of head, wing-coverts, and breast; legs, flanks, and under tail-coverts with obscure transverse spots and bars of reddish brown; remainder of under parts with fine, but very regular and distinct, blackish bars which form lateral offshoots of the mesial streaks; under wing-coverts tawny with obscure brownish mottling. Wing 6.56; tail, 3.80; tarsus, 1.37; bill from nostril, .47 inch.

The specimen just described bears a somewhat close general resemblance to my type of *M. aspersus* (from Mexico), but is considerably larger and lacks the rusty chestnut of the throat and neck and the conspicuous bearding of the auriculars and superciliary tufts. The under parts, also, are ashier, and the markings generally finer although much coarser than in any of the more northern forms. Indeed in the dark ground color of the under parts and the excessively coarse, abundant streaking both above and beneath the bird differs so widely from all of the latter, that I am quite at a

* An author's Edition of 100 copies of this paper was published Feb. 17, 1891.—ED.

† Named for Mr. Charles E. Aiken of Colorado Springs, Colorado.

loss to suggest its probably nearest affine among them. I had the skin of Mr. Aiken who, if I remember aright, asserted that it was a fair representative of the form which inhabits cottonwood timber along streams in the plains region about Colorado Springs, *maxwelliæ*, of which he showed me several typical specimens, being confined to the neighboring mountains. According to Capt. Bendire, however, the latter form has been found breeding in cottonwoods on the Platte River within six miles of Denver (Auk, VI, October, 1889, p. 298).

Megascops asio macfarlanei,* new subspecies. MACFARLANE'S
SCREECH OWL.

SUBSPEC. CHAR.—Of the size of *M. kennicotti*, but with the color and markings of *M. bendirei*.

Female ad. (No. 6456, collection of William Brewster, Fort Walla Walla, Washington, October 22, 1881; Capt. Charles E. Bendire, U. S. A.).—Ground color above brownish ash tinged with vinaceous, darkest on the head and back, palest on the wings, with confused, often nearly obsolete, transverse bars and longitudinal shaft stripes of dull black, broadest and most numerous on the crown; outer edges of scapulars and alula-coverts cream color, the former tipped and narrowly margined with black; secondaries and inner webs of primaries crossed by six or seven bars of pale reddish brown or rusty white; outer webs of primaries with broad, quadrate spots of brownish white; tail regularly but faintly barred with light reddish brown; feathers of the sides of head and neck thickly but finely mottled with dusky on a lighter ground; lores nearly pure white, but the shafts and tips of the feathers dusky or brownish; a somewhat broken, facial circle of black and chestnut spots and blotches; beneath ashy white, lightest on the abdomen, with numerous, fine, regular, transverse bars of black and coarse shaft-stripes of the same color, many of these bars and stripes bordered with pale rusty, the only immaculate space being the middle of the abdomen, which is creamy white; lining of wings and concealed silky plumage of sides under the wings pale ochraceous; some of the under wing-coverts barred with brown; feathering of legs dull rusty chestnut, faintly barred with reddish brown. Wing, 7.23; tail, 3.85; tarsus, 1.67; length of bill from nostril, .57 inch.

Male ad. (No. 6457, collection of William Brewster, Fort Walla Walla, Washington, November 20, 1881; Capt. Charles E. Bendire, U. S. A.).—Similar to the female, but smaller, the dark markings coarser and better defined. Wing, 6.96; tail, 3.80; tarsus, 1.50; length of bill from nostril, .53 inch.

*Named, at Capt. Bendire's request, for Mr. Robert MacFarlane who, as is well known, was a personal friend of Robert Kennicott and an enterprising and accomplished field ornithologist.

Habitat.—Fort Walla Walla, Washington; Hellgate, Montana; and probably the entire intermediate region, and northward into the interior of British Columbia.

Megascops asio saturatus, new subspecies. PUGET SOUND SCREECH OWL.

SUBSPEC. CHAR.—Similar to *M. a. kennicotti* but smaller, the general coloring darker and less tawny, the face and under parts with much more white. *Dichromatic.*

Gray phase. Female ad. (No. 25,846, collection of William Brewster, Victoria, British Columbia, February 18, 1889; from E. H. Forbush.).—Upper parts nearly uniform dark slate-gray with the slightest possible reddish tinge, the plumage everywhere so thickly streaked, barred, and vermiculated with dull black as to obscure the ground color, the markings, particularly the shaft stripes, coarsest and most regular on the crown and nape but nowhere sufficiently contrasted with the general coloring to be at all conspicuous: ear-tufts, nape, and sides of neck with concealed pale rusty or fulvous white disposed in irregular stripes or blotches on both webs of the feathers; a broad, dull black bar on each side of the head extending from the base of the ear-tufts over the tips of the auriculars nearly to the throat; outer webs of outer scapulars and some of the outer wing-coverts fulvous white, the former tipped and narrowly edged with black; secondaries and inner webs of primaries crossed by six or seven bars of grayish ash tinged slightly with fulvous, these bars so pale and indistinct on the primaries as to be nearly obsolete; outer webs of primaries with quadrate spots of dull rusty white with dark brown centres; tail with faint and irregular transverse bars of ashy white tinged with rusty; anterior half of orbital region plain clove-brown; superciliary line and lores white, the feathers dusky or blackish towards their tips; remainder of facial disc ashy white with numerous fine, transverse markings of clove-brown; under parts clear ashy white, tinged with rusty on the jugulum, flanks, and legs, very faintly with fulvous on the breast, the plumage everywhere, including the abdomen and under tail-coverts, with coarse, sharply defined, longitudinal stripes and fine, wavy, transverse bars of black, the former very broad and conspicuous on the breast; under wing-coverts fulvous, thickly but obscurely barred with clove-brown; feathering of legs mottled and barred with reddish brown. Wing, 6.87; tail, 3.65; tarsus, 1.50; length of bill from nostril, .52 inch.

Ferruginous phase. Male ad. (No. 25,845, collection of William Brewster, Victoria, British Columbia, November 24, 1888; E. H. Forbush).—Markings closely similar to those of the bird just described but with the ground color of the entire upper parts tinged with tawny or rusty cinnamon, bringing out the black streaks and bars in sharper relief; cheeks, jugulum, breast and sides with more rusty than in the female, but the ground color of the superciliary region, lores, chin and entire abdomen,

essentially pure white. Wing, 6.70; tail, 3.65; tarsus, 1.50; length of bill from nostril, .47 inch.

Habitat.—Shores and islands of Puget Sound, and southward, along or near the coast, to Salem, Oregon.

In a paper published* about nine years ago I referred some large Screech Owls taken at Fort Walla Walla by Capt. Bendire to *Megascops kennicotti*, assuming that they represented a hitherto unrecognized gray phase of the latter. At the time this seemed to be a reasonable hypothesis, for my material showed that the gray and brown forms were connected by intermediates, and indicated that neither style of coloration was peculiar to any particular portion of the general region which my specimens represented. Since then, however, I have become convinced, by examination of a large number of skins from various localities in Oregon, Washington and British Columbia, that the gray bird found at Fort Walla Walla and elsewhere in the dry, elevated region east of the Cascade Mountains is really a distinct subspecies. It will be remembered that among my chief reasons for originally thinking it merely a gray phase of *kennicotti* were the facts that a specimen in the National Museum collection labelled as collected in Idaho, by Dr. Whitehead, was nearly as brown as the type of *kennicotti*, while I had what seemed to be the gray bird from Portland, Oregon. I am now assured by Capt. Bendire, however, that the label of the supposed Idaho specimen is not to be trusted and that the bird was undoubtedly taken near the mouth of the Columbia River where Dr. Whitehead was for some time stationed. Moreover the form of *Megascops* found on and near the coast of Oregon, is shown by examination of more material to be much smaller and, as a rule, differently colored from that occurring east of the Cascade Mountains. Furthermore, I now have the gray phase of the coast form and it proves to be very unlike the Walla Walla birds. Hence my original reference of the latter to *kennicotti* cannot be longer sustained.

As will appear from the diagnosis and description, *M. macfarlanei* resembles *M. bendirei* very closely in general color and markings. Indeed the only constant difference is that of size, but this is so marked that there is no difficulty whatever in separating specimens which come from well within the respective habitats of

* Bull. Nutt. Orn. Club, VII, Jan. 1882, pp. 27-33.

the two forms. It is to be expected, of course, that the birds will prove to intergrade at points where they approach one another, a probability already indicated by a specimen (No. 16,027) in the National Museum from Fort Crook, northern California, which is about intermediate in size, between the types of *bendirei* and *macfarlanei*. I am informed by Capt. Bendire that there is quite as appreciable a difference in size between the eggs of these Owls as between the skins, the average measurements of twenty-six eggs of *M. bendirei* in his (the National Museum) collection being 35×30 mm. with extremes of 36×32 mm. and 32×28 mm., against the average 37.5×32 mm., and extremes of 39×33.5 and 35×31.5 mm., of twenty-seven eggs of *M. macfarlanei*.

M. saturatus is dichromatic. In its gray phase, which is represented by two specimens (including the type) before me it is strikingly different from any other form of the genus which I have examined. At first sight the upper parts appear to be nearly uniform dark slaty brown with the faintest possible tinge of reddish and some dull black shaft stripes on the feathers of the top of head and hind neck besides a little half concealed rusty fulvous on the ear-tufts and nape; but closer inspection reveals innumerable black or blackish markings very generally distributed but so confused and crowded and so slightly contrasted against the dark background as to be nowhere conspicuous. The ground color of the under parts is essentially ashy white with a little rusty on the jugulum and a slight tinge of fulvous on the breast and sides.

In the red phase the upper parts are much as in *kennicotti*, but the tawny or rusty is less pronounced and the general coloring deeper and duller, while the wings and tail are more ashy. The best distinction, however, consists in the much greater amount of white on the face and under parts, especially on the superciliary region, lores, chin, and abdomen, which are nearly or quite free from any tawny tinge. All the specimens from Victoria are considerably smaller than the type of *kennicotti*, but one from New Westminster is larger although in other respects it is typical *saturatus*.

It is possible, of course, that the type* of *kennicotti* is aber-

*I have seen no Alaskan specimens except this type, and am not aware that any exist in collections.

rant in respect to the characteristics just named, but as the Song Sparrow found at Sitka represents a distinct subspecies from that which occurs about the lower portions of Puget Sound there seems to be a strong probability that the equally plastic and still more sedentary Screech Owls of these regions possess quite as constant differences. There is, indeed, an apparent and very interesting analogy, in respect to relative size, coloring and habitat, between *Megascops kennicotti et saturatus* and *Melospiza rufina et guttata*, while to some extent, but less closely, *Megascops macfarlanei* corresponds with *Melospiza montana*, and *Megascops bendirei* with *Melospiza samuelis*.

Contopus richardsonii peninsulæ, new subspecies. LARGE-BILLED WOOD PEWEE.

SUBSPEC. CHAR.—Much smaller than *C. richardsonii* but with the bill actually, as well as relatively, longer and broader, the color of the upper parts slightly grayer, the yellowish of the throat and abdomen clearer or less brownish and more extended, the pectoral band narrower and grayer, the light edging of the inner secondaries and greater wing-coverts broader and whiter.

Male ad. (No. 16,790, collection of William Brewster, Sierra de la Laguna, Lower California, May 9, 1887; M. Abbott Frazar).—Above, with the sides of the head, neck, and breast, dull grayish brown faintly tinged with olive; wings and tail clove-brown, with the inner secondaries broadly edged and tipped with ashy white, the greater and middle wing-coverts with brownish white; feathers of the crown with dark (clove-brown) centres; median under parts pale straw-yellow, almost primrose-yellow on the abdomen, the breast crossed by a narrow band of brownish gray, the sides also grayish. Wing, 3.30; tail, 2.38; tarsus, .52; bill, length from nostril, .42; width at nostril, .31 inch.

Female ad. (No. 16,777, collection of William Brewster, Triunfo, Lower California, June 13, 1887; M. Abbott Frazar).—Similar to the female above described, but smaller, the yellow of the under parts paler. Wing, 3.00; tail, 2.29; tarsus, .50; bill, length from nostril, .42; width at nostril, .30 inch.

Habitat.—Sierra de la Laguna, Lower California.

In the coloring of the under parts this form resembles *C. virens*, the yellowish of the throat and abdomen being of about the same shade and fully as extended as in that species. The breast and sides, however, are less olivaceous and more as in *richardsonii*, but grayer, with the pectoral band almost invariably narrower. The

coloring of the upper parts is essentially similar to that of *richardsonii*, but perhaps a trifle paler. The wings and tail are much shorter or about as in *virens*. The bill averages considerably larger (both longer and broader) than in either *virens* or *richardsonii*. *C. richardsonii* is subject to a good deal of geographical variation in respect to size, the birds in my series from the Sierra Nevada and Rocky Mountain regions being much larger than those from the coast of California and the Sierra Madre of Mexico. The wings and tail of the latter average scarcely, if at all, longer than in *C. peninsulae*, but their bills are rather smaller than those of the Rocky Mountain and Sierra Nevada birds, instead of being much larger, as is the case with *peninsulae*. It must be admitted that none of the differences just enumerated are perfectly constant, but with birds of the same sex and age they serve to distinguish fully ninety-five per cent of the large series (over one hundred specimens) collected in Lower California by Mr. Frazar.

***Ammodramus henslowii occidentalis*, new subspecies.**
WESTERN HENSLOW'S SPARROW.

SUBSPEC. CHAR.—Similar to *A. henslowii* but the general coloring paler above and whiter beneath, the back and scapulars with broader black streaking and much less chestnut, the wings and tail grayer.

—*Adult*. (No. 25,959, collection of William Brewster, Moody County, Dakota, June 16, 1882; F. T. Jencks).—Top of head and nape pale grayish olive; forehead and crown with a broad stripe of black spots on each side; mind neck more finely and sparsely spotted; wing-coverts, scapulars, and feathers of the back with coarse, central streaks of dull black bordered outwardly with a little pale chestnut, this shading quickly into grayish white which forms a broad margin on all these feathers; wing-coverts, quills, and tail-feathers faded brown, edged rather broadly with brownish white and tinged with chestnut on the inner secondaries and towards the bases of the rectrices; upper tail-coverts pale chestnut with narrow shaft streaks of dark brown; under parts dull white with fine black spots and streaks on the breast and sides and broader ones on the flanks, which are slightly tinged with reddish brown; sides of head buffy white with a little yellow above the eye and two narrow, black, mandibular stripes, and one postocular, on each side, besides an obscure black crescent or spot behind the auriculars; shoulders tinged with greenish yellow, and bend of wing yellowish white.

Wing, 2.18; tail, 1.95; tarsus, .69; bill, length from nostril, .31; depth at nostril, .32 inch.

Habitat.—Dakota, —and probably other regions along the eastern border of the Great Plains.

Two other specimens in my collection, taken in the same locality at nearly the same date, are similar in every respect save that one has a trifle more chestnut on the back although much less of this than have any of the large number of Eastern birds before me. Several examples from Illinois are a shade paler than those from the Atlantic States, but I refer them all, without hesitation, to *henslowii*. Massachusetts specimens are nearly as white beneath as *occidentalis*, but their upper parts are marked and colored like those of the birds that breed near Washington, D. C., which probably most nearly represent true *henslowii*.

Pipilo maculatus magnirostris, new subspecies. MOUNTAIN TOWHEE.

SUBSPEC. CHAR.—Similar to *P. m. megalonyx*, but with the bill much larger, the rufous of the under parts paler, the upper parts browner and tinged with olive. Female very decidedly lighter than the male.

Male ad. (No. 16,070, collection of William Brewster, Sierra de la Laguna, Lower California, May 21, 1887; M. Abbott Frazar). Upper parts generally, with the head and neck all around to the upper part of the breast, dull black, the back and rump mixed with brownish olive, the wing quills dark olive brown; white markings of the back, scapulars, wing-coverts, wings, and tail, about as in typical *megalonyx*; middle of breast and belly white; sides rusty ochraceous; flanks and under tail-coverts brownish buff. Wing, 3.37; tail, 3.85; tarsus, 1.08; length of bill from nostril, .42; depth of bill at nostril, .40 inch.

Female ad. (No. 16,081, collection of William Brewster, Sierra de la Laguna, Lower California, May 21, 1887; M. Abbott Frazar).—Similar to the male just described but with the black everywhere replaced by grayish brown, tinged with olive on the back, darkest on the upper part of the breast; feathers of the crown streaked centrally with orange rufous. Wing, 3.28; tail, 3.71; tarsus, 1.07; length of bill from nostril, .41; depth of bill at nostril, .39 inch.

Habitat.—Cape St. Lucas Region of Lower California.

The proper assignment of the Towhees of the *P. maculatus* group taken by Mr. Frazar in Lower California is a matter of some difficulty. With respect to the white spotting of the scapulars, wings, and tail, they agree very well with *megalonyx*. But the rufous of the flanks, sides, etc., is quite as pale or ochraceous

as in *arcticus*. The female is very like that of the form last mentioned, instead of being nearly as dark as the male, as is the case with the female of *megalonyx*. Only two of my seventeen males have the back black, the feathers of this part in all the others being more or less broadly edged with brownish or olivaceous. Both males and females have the bill uniformly much larger and stouter than in any of my specimens of the allied forms from the United States. Some of the peculiarities just mentioned, including the heavy bill, can be very closely matched in a series of breeding specimens from the mountains of Chihuahua, Mexico, but none of the latter are as pale on the flanks and sides. Mr. Ridgway, who has examined these Chihuahuan birds, pronounces them to be intermediate between *megalonyx* and *maculatus*. The Lower California examples might be similarly disposed of, but in view of their isolated habitat and the fact that they exhibit a *combination* of characters unlike that of any form hitherto recognized and fairly constant, I have thought them entitled to subspecific separation.

The orange rufous streaking on the crown of the female above described is found on several other birds (all females) in my series and on one or two constitutes a conspicuous and rather ornamental marking. As it is wholly lacking on many Lower California birds it cannot be taken as a diagnostic character, although I find no trace of it in any of the other forms of the *maculatus* group.

Vireo solitarius lucasanus, new subspecies. ST. LUCAS
SOLITARY VIREO.

SUBSPEC. CHAR.—Smaller than *V. s. cassinii*, but with the bill (actually, as well as relatively) longer and stouter, the sides and flanks much yellower. Young in autumn without brownish beneath, and closely resembling the young of *solitarius*.

Male ad. (No. 15,504, collection of William Brewster, San José del Rancho, Lower California, July 15, 1887; M. Abbott Frazar). Top and sides of head and middle of the back dusky ashy; remainder of the upper parts, including the outer edges of the wing- and tail-feathers, dull olive green; secondaries and greater and middle wing-coverts tipped with brownish white; all the wing quills edged internally with the same; inner webs of the outer tail-feathers narrowly edged with white; under tail-coverts nearly white; bend of wing brownish white; flanks and sides

canary-yellow, slightly tinged with greenish olive on the sides of the breast and abdomen; lores dusky; a broad line from the nostril to and around the eye creamy white.

Wing,* 2.73; tail,* 2.04; bill, depth at nostril, .18; length from nostril, .33 inch.

Female ad. (No. 15,510, collection of William Brewster, San José del Rancho, Lower California, July 5, 1887; M. Abbott Frazar).—Closely similar to the male above described, but slightly smaller. Wing, 2.70; tail, 2.04; bill, depth at nostril, .18; length from nostril, .33 inch.

Young male in autumn. (No. 15,521, collection of William Brewster, Triunfo, Lower California, Dec. 23, 1887; M. Abbott Frazar).—Top and sides of head dull ashy with perhaps a tinge of olive; remainder of upper parts bright olive green, pure on the rump and upper tail-coverts, somewhat mixed with ashy on the nape and back; under parts white, the throat clear, the middle of the abdomen tinged faintly with creamy buff, the anal region, under wing- and tail-coverts pale yellow, the flanks and sides canary-yellow as in the adult but with more greenish olive on the sides of the breast and abdomen; all the wing quills except the outer primary conspicuously tipped with brownish white and edged outwardly with greenish olive, inwardly with white; greater and middle wing-coverts broadly edged with yellowish, forming two conspicuous wing-bands; the outer pair of tail-feathers narrowly bordered around the edges of both webs, as well as at the tip, with white, the other tail-feathers similarly, but still more narrowly, margined on the inner webs, the outer webs being greenish olive; bend of wing brownish white; lores dusky; a broad white line from the nostril to and around the eye as in the adult. Wing 2.70; tail, 2.15; bill, depth at nostril, .18; length from nostril, .29 inch.

This Vireo although averaging considerably smaller than *V. s. cassinii* has a bill as large and stout as in *V. s. alticola*. In the coloring of the upper parts all my spring and summer specimens agree closely with *cassinii* but there is a decided and very constant difference in the color of the flanks and sides, these having quite as much yellow as, but *much* less greenish than, *V. solitarius*. In autumnal plumage the Lower California bird approaches autumnal specimens of *solitarius* very closely, having the upper parts quite as bright olive green, the wing-bands as yellow, and the head nearly as clear ashy. There is also fully as much yellow on the sides, but much less greenish. These characteristics, with the almost total lack of brownish beneath, distinguish it readily from young *cassinii*.

* The wings and tail of this specimen are considerably worn.

***Sitta carolinensis lagunæ*, new subspecies. ST. LUCAS
NUTHATCH.**

SUBSPEC. CHAR.—Similar to *Sitta carolinensis aculeata*, but with the wings and tail shorter, the black on the tips of the outer tail-feathers more restricted.

TYPES.—*Male ad.* (No. 14,691, collection of William Brewster, Sierra de la Laguna, Lower California, May 5, 1887; M. Abbott Frazar).—Wing, 3.41; tail, 1.97; tarsus, .72; bill from nostril, .59 inch.

Female ad. (No. 14,705, collection of William Brewster, Sierra de la Laguna, Lower California, May 7, 1887; M. Abbott Frazar).—Wing, 3.20; tail, 1.73; tarsus, .67; bill from nostril, .53 inch.

The differences just mentioned, though slight, are remarkably constant in the large series of specimens before me. Specimens of *S. c. aculeata* from various localities in the Rocky Mountain region, California, and as far south along the Sierra Madre Mountains of Mexico as Chihuahua, present very little variation in size. The Lower California birds have the wings decidedly, the tail slightly, shorter than in *aculeata* but the bill is fully as long and slender. The difference in the tail marking is a curious one. The white spots on the outer three rectrices are not more extensive than in *S. c. aculeata* but they are nearer the tips of the feathers, thus narrowing the blackish apical band to from one half to three quarters the width that it is in *aculeata*. The third feather has at most only a trace of dusky on the tip, and in a few birds none whatever. Several specimens in the Lower California series have the wing-quills and all the tail-feathers, except the middle pair, light reddish brown at their tips.

NOTES ON BACHMAN'S WARBLER (*HELMINTHOPHILA BACHMANI*).

BY WILLIAM BREWSTER.

ONE of several attractive possibilities discussed by Mr. Chapman, Dr. Allen, and myself before starting on the trip described elsewhere in this number of 'The Auk'* was the meeting with

**Antea* pp. 125-138.

Bachman's Warbler. If I remember rightly we did not venture to hope that more than a few of these interesting birds would be taken or seen; accordingly it was an agreeable surprise to find them actually common along the Suwanee River,* at nearly every spot where we landed, between the mouth of Santa Fe Creek and a point some fifteen miles north of the Gulf. Here the varied and luxuriant forests which line the banks of the Suwanee throughout the greater part of its course give place to monotonous and uniformly swampy woods composed chiefly of stunted cypresses intermingled with bay trees and red cedars and interspersed with saw-grass savannas. Below this point we searched vainly for our Warbler. Either it had passed northward before we arrived, or the coast country is not to its liking. The latter seemed to us the more probable theory in view of what we had learned of the bird's habits and haunts on the river above.

Our first specimen, a male, was killed by Mr. Chapman, March 12; the first female, March 15. The date of greatest apparent abundance was March 23 when I identified upwards of thirty individuals and took nine males and a female in less than three hours. The species was last seen March 24. During the period covered by these dates we traveled about seventy miles down stream (in a generally southerly direction), and rarely spent two days in the same place.

Nearly or quite all that has been hitherto written about this Warbler would lead one to infer that its favorite haunts are dense thickets, undergrowth, or low trees, and that it seldom ventures to any considerable height above the ground.† Our experience,

*There seems to be no record of the previous occurrence of the species anywhere on the *mainland* of Florida.

†Its discoverer, Dr. Bachman, according to Audubon (Birds Am., Vol. II, p. 93), described it as "a lively, active bird, gliding among the branches of thick bushes, occasionally mounting on the wing and seizing insects in the air in the manner of a Fly-catcher." The numerous specimens which Mr. Atkins has observed at Key West during migration were also "very active, and constantly in motion" and were "found alike in the trees, low bushes, and shrubbery, sometimes on or quite near the ground," seeming to "prefer the heavy and more thickly grown woods to trees or bushes more in the open" (Scott, Auk, VII, Jan. 1890, p. 17). All but two of the thirty-one specimens obtained by Mr. Galbraith on the shores of Lake Ponchartrain, Louisiana, in March, 1888, were taken "in the tops of the sweet-gum, probably attracted by insects found in the buds and blossoms of this tree." The two exceptions were "so low down on the tree on which they were discovered, that their plumage was easily distinguished" (Auk, V, July, 1888, p. 323). The last statement implies, of course, that the other birds were high above the ground, but this point is not distinctly brought out by anything in the account from which these quotations are made.

however, was directly contrary to this, for we found it oftenest on bottom lands where the forests, although composed of grand old trees thickly hung with Spanish moss, were rarely dense or tangled, the ground being nearly or quite free from undergrowth and either muddy with pools of stagnant water or carpeted with dry leaves. The bird, moreover, not only frequented the tops of the tallest trees, but at all times of the day and under every condition of weather kept at a greater average height than any other Warbler excepting *Dendroica dominica*. In its marked preference for cypresses it also resembled the species just named, but unlike it was never seen in pines. It was usually met with on or very near the banks of the river or its tributary creeks, but this may have been due to the fact that we found paddling a light canoe so much more agreeable and expeditious than walking that we seldom went far from the attractive and convenient waterways with which the region abounded.

The habit of keeping high in the trees was not, on the part of our Warbler, wholly without exceptions — which will be given later. But what species is so strictly arboreal as never to approach the ground? Under certain conditions birds often turn up in strange and unexpected places. Especially true is this of the season of migration. I remember starting a Carolina Rail and a Bittern at the same moment in a patch of beach grass on the sand-hills at Swampscott, Massachusetts, and on another occasion, in a similar place at Nantucket, I killed a Gray-cheeked Thrush, a Connecticut Warbler, and a Tennessee Warbler in the course of a few minutes; while it is not unusual, in early autumn, to find such tree-loving species as Red-bellied Nuthatches and even Brown Creepers feeding among rocks on barren points or islands along the seacoast. In view of these considerations there now seem reasons for suspecting that when, as at Key West, Bachman's Warbler has occurred numerous in thickets or low scrub, this has been due, not to a preference for such cover, but simply to the fact that no better shelter was available during a necessary halt in a long journey, and that its favorite haunts are lofty tree tops.

It would be possible, of course, to argue on the other side of the question and to suggest that the conditions which existed during our visit to the Suwanee were peculiar. Thus it may be that the tender young foliage of the great cypresses furnished an excep-

tional supply of insect or other food which at that season was scarce or wanting near the ground. In support of this assumption is the fact that Prairie Warblers, Blue-gray Gnatcatchers, and certain other species of normally low-ranging habit were often seen in the upper branches of the tallest trees where the Bachman's Warbler may have been equally out of place. But on the whole the hypothesis first suggested seems to be the better sustained, while, taken in connection with some considerations which I shall presently mention, it may partly explain why our bird has thus far eluded observation in the breeding season when, as is now evident, it must be a common bird in at least some of the Southern States.

At the time of our visit the Suwanee bottoms were alive with small birds many of which were doubtless migrants. They banded together in mixed flocks often of large size and motley composition. It was not unusual to find in close association forty or fifty Parula Warblers, half as many Yellow-rumps, and smaller numbers of Yellow-throated and Palm Warblers, Tufted and Carolina Titmice, Red-eyed and Solitary Vireos, Blue-gray Gnatcatchers, Ruby-crowned Kinglets, Carolina Wrens, Catbirds, Brown Thrushes, and Towhees, with perhaps a Prairie or Orange-crowned Warbler and often several of the smaller Woodpeckers. Such a gathering was nearly certain to contain from one or two to five or six Bachman's Warblers. These with the Parulas were most likely to be feeding in the upper branches of some gigantic cypress, at least one hundred feet above the earth, where they looked scarcely larger than humble bees and were safe from all but the heaviest charges with which our guns were supplied. Under such conditions it was next to impossible to distinguish the two species except by certain slight peculiarities of form or movement, for against the dazzling light of the southern sky they appeared as little more than silhouettes and the chestnut throat-markings of the Parula showed quite as dark and distinct as the black cravat of the Bachman's Warbler.

The latter bird, however, was the larger or rather plumper-looking of the two, and if the upper side of its wings could be seen the absence of the white bars which are so conspicuous on the wings of the Parula Warbler was quickly noticed. But these differences were not easily made out when the birds were in tree tops, and as we refrained from chance shots most of our specimens

were obtained at the expense of much patient 'star gazing' accompanied by inevitable straining of the neck muscles; while far too often, despite our utmost care, the victim finally selected would prove to be an unfortunate Parula.

Of course it is only the male Bachman's Warbler which can be confounded with the Parula, for the female — setting aside occasional individuals which have black on the throat — is most like the Orange-crowned Warbler. Indeed it resembles the latter species so very closely, not only in general coloring but in form and movement also, that it would require a remarkably keen and practised eye to distinguish one from the other at a greater distance than a few paces. Both sexes of Bachman's Warbler habitually carry the feathers of the crown a little raised, giving the head a fluffy appearance.

A few shots fired into a flock such as that just described would usually alarm and scatter its members or start them in rapid motion through the woods, but one of our party made the curious and very useful discovery that they could be quieted and brought together again by an imitation of the whistle of the Tufted Titmouse. Apparently this bird was recognized as a guide or leader of the throng, a fact possibly due to its loud and persistent voice.

At times, especially on frosty mornings, or when there was a cold north wind, most of the small birds (including the Parulas) inhabiting this region, descended from the tree tops into low bushes, especially those growing out over the water on the sunny side of the river; but with a single exception — that of the bird shot by Mr. Chapman, March 12 — no Bachman's Warblers were ever seen in such situations. On these, as well as certain other occasions, however, they frequented to some extent small maples, magnolias, or hackberry trees on the river banks and on dry ridges in the swamps, coming down occasionally to within twenty or thirty feet of the ground but almost never lower. Once I found two males together, but not in company with any other birds, in oak scrub, on the crest of a sandy bluff. They kept as high as the trees permitted and appeared restless and ill at ease, as if the place were not to their liking, which was doubtless the case. Most of the specimens collected on the 23rd were taken on rather high ground bordering the river, in a tract of open woods where the trees were chiefly deciduous oaks the leaves of which, just beginning to unfold, had that delicate salmon-pink tint seen in our northern oaks at the corresponding season. Within an area

of ten or fifteen acres there must have been nearly one thousand Warblers, of which probably five per cent were Bachman's. It was comparatively easy to identify them, for the trees although large and spreading were not excessively high, and with more time I could have taken thrice as many specimens as were actually obtained.

On the morning just mentioned I heard several males singing, and shot one in the act, after watching him awhile. He was perched on a dead twig in the very top of a tall sweet gum, with his breast turned toward the sun. At each repetition of the song he threw up his head and I could see the throat swell and the wings quiver under the strong effort, but during the whole time that I was looking at him there was no other movement, save an occasional turning of the head. The song is unlike that of any other species of *Helminthophila* with which I am acquainted and most resembles the song of the Parula Warbler. It is of the same length and of nearly the same quality or tone, but less guttural and without the upward run at the end, all of its six or eight notes being given in the same key and with equal emphasis. Despite these differences it would be possible to mistake the performance, especially at a distance, for that of a Parula singing listlessly. The voice, although neither loud nor musical, is penetrating and seems to carry as far as most Warblers'. Besides the song the only note which we certainly identified was a low hissing *zee-e-eeé*, very like that of the Black-and-white Creeper.

Both Dr. Bachman and Mr. Atkins have characterized Bachman's Warbler as an active, animated bird, and the former saw it "mounting on wing and seizing insects in the air in the manner of a Flycatcher."* This again is curiously at variance with our experience which I find described in my notes in the following words, written at the close of the trip and fully approved by Mr. Chapman when the subject was fresh in our minds:

"The habits and movements of Bachman's Warbler are in some respects peculiar and characteristic. It does not flit from twig to twig nor launch out after flying insects in the manner of most Warblers, and many of its motions are quite as deliberate as those of a Vireo. Alighting near the end of a branch it creeps or sidles outward along a twig, and bending forward until the head points nearly straight down, inserts the bill among the ter-

*See foot-note on page 150.

minal leaflets with a peculiar, slow, listless motion, keeping it there a second or two, and repeating the leisurely thrust many times in succession without changing its foothold. The action is like that of several other members of the genus—notably *H. pinus* and *H. chrysoptera*—under similar conditions, and suggests the sucking in of liquid food, perhaps honey or dew. Not infrequently a bird would hang back downwards beneath a twig and feed from the under sides of the leaves in the manner of a Titmouse. The Parula Warblers did the same thing—and many fell to our guns in consequence.”

When in maple, hackberry, or magnolia trees the male Bachman's Warbler was not difficult to recognize, especially if it showed its throat and breast against a background of solid foliage, for then the black cravat and rich, uniform yellow of the under parts were conspicuous and unmistakable. In such a position it might have been mistaken for a Black-throated Green Warbler, but this species, fortunately for us, was not among the birds found on the Suwanee River.

Many of the hackberry trees along the banks of this stream contained compact bunches—nearly as large as a child's head—of dead leaves blackened by exposure to wind and weather. These bunches probably sheltered insects or their larvæ, for they attracted several species of birds, especially the Bachman's Warblers which would work at them* minutes at a time with loud rustling, sometimes burrowing in nearly out of sight and sending the loosened leaves floating down to the ground. Upon exhausting the supply of food or becoming tired of the spot—whether one of the leaf bunches or the extremity of a cypress branch—the bird almost invariably started on a long flight, often going hundreds of yards through the woods or crossing the river, instead of merely passing to the next branch or tree as almost any other Warbler would have done under similar circumstances. This habit seemed to us characteristic of the species.

The sexual organs of all the specimens examined, especially those of the females, were only slightly developed, which may account for the fact that the males sang so seldom. Probably none of the birds which we killed would have bred for three or four weeks. Hence there is no proof that they were not all migrants bound to some point further north, and simply following

*Mr. Atkins has also observed this at Key West. See Auk, VII, Jan. 1890, p. 17.

the course of the Suwanee as a convenient pathway. Nevertheless, I cannot help suspecting that they breed numerously in this river-bottom, and that the nest is placed in the Spanish moss (*Tillandsia*). On several occasions I saw females clinging to streamers of this moss, peeping into it as if looking for a nesting-place, although of course they may have been merely searching for food. A few of our specimens had the skin thickly lined with fat, but the majority were in only fair condition.

Our males, thirty-six in number, vary exceedingly in respect to the depth and extent of the black of the head and throat. This in the finest birds is essentially pure with a slight lustre, but most of the black feathers are narrowly tipped with ashy or olive yellow which doubtless disappears later in the season. In the duller birds this light edging is broad and diffused, obscuring or half concealing the black, and giving the plumage a mottled appearance. Owing partly to this, but chiefly—as is shown by examination of the under plumage—to variation in the extent of its actual distribution, the black in some cases appears over the entire throat and jugulum; in others is restricted to a small central space on the latter, leaving the whole throat, as well as the chin, yellow. Various styles intermediate between these extremes are shown by our series of which scarcely any two specimens are precisely alike. In some the anterior border of the black is abruptly and sharply defined, in others the throat constitutes a neutral area which is spotted or mottled with black on a yellow ground. One bird has the spots confined to the centre of the throat where they form a cluster separated from the black of the jugulum by an interval of nearly pure yellow, in another the middle of the throat is immaculate and the spots extend forward along its sides. The posterior border of the black varies similarly in distinctness, but its position is nearly always at about the dividing line between the jugulum and the breast. Its outline is sometimes deeply concave, sometimes decidedly convex or rounded, and occasionally nearly straight. The black on the head varies from a solid, glossy patch embracing the entire crown—but never the occiput, as represented in Audubon's plate—to a narrow, dusky band bordering the forehead. Even this band is wanting in occasional birds which have the dark color represented only by inconspicuous and half-concealed black or dusky spots on the centres of the feathers of the crown.

The yellow of the underparts is also very variable. In some

birds it is pale or obscured with dusky olive, in others rich and pure ranging from deep lemon to light gamboge, which, however, in the brightest specimen before me does not quite equal the coloring represented in Audubon's much criticized plate. The yellow sometimes spreads over the entire abdomen and also tinges the sides, flanks, and crissum, but in the dullest birds it is confined to the breast and a narrow central space on the fore abdomen, the remainder of that part, with the crissum and flanks, being ashy white more or less suffused with smoke-gray. There is apparently no correlation between the extent of the black on the jugulum and throat and that on the crown, nor between the amount or purity of black on either or both of these parts and the depth of the yellow. Thus the bird with the largest crown patch has most of the throat yellow, and the one in which the cravat is best developed has an exceptionally small amount of black on the crown, while neither is among the specimens which are most richly colored in respect to the yellow of the under parts. The yellow frontal band is fairly uniform in color, but is twice as wide in some birds as in others.

We collected ten females. Of these the brightest is practically indistinguishable from the dullest male when the two are placed side by side on their backs, for in the general coloring of their underparts they agree very closely, much better in fact than does the male with any of the other examples of its own sex. This female, however, has a trifle less black on the jugulum and only a little concealed black spotting on the crown, but another which shows only a very little black on the jugulum possesses a band of exposed dusky spots on the crown. The most constant and evident sexual character seems to be the presence of a clearly outlined yellow frontal band in the male and its absence in the female. In all the males which I have examined this band is conspicuous and well defined. Many females, it is true, have the forehead tinged with yellowish or olive, but this is merely a suffusion, not a pure color, and in its extension backward it invariably shades insensibly into the color of the crown instead of being separated from the latter by a distinct line of demarcation. It should be stated, however, that I have been able to apply this test only to spring specimens and that it may fail with the young in autumn plumage.*

*Audubon states that the female is "considerably smaller than the male," but our specimens show that there is only a slight *average* difference in this respect. The largest females are decidedly larger than the smallest males.

A LIST OF BIRDS OBSERVED AT SANTAREM, BRAZIL.

BY CLARENCE B. RIKER.

With Annotations by Frank M. Chapman.

[Concluded from p. 31.]

149. *Momotus nattereri* *Scl.*—Common; seen only in the lowlands.
[Three examples agree with a Bolivian specimen. This species has apparently not before been recorded from the Lower Amazon.—F. M. C.]
150. *Ceryle torquata* (*Linn.*).—Common.
151. *Ceryle amazona* (*Lath.*).—Common.
152. *Ceryle americana* (*Gm.*).—Common.
- [153. *Ceryle superciliosa* (*Linn.*). — A female taken by Smith. — F. M. C.]
154. *Trogon melanurus* *Sw.*—A female taken June 23 and a male July 8, 1889, near the river.
[The male has the throat, breast, and upper surface of a rich peacock-blue, deepest on the rump, and with comparatively slight trace of bronzy reflections.—F. M. C.]
155. *Trogon viridis* (*Linn.*).—Common; more abundant in the lowlands.
- [156. *Trogon meridionalis* *Sw.*—"Santarem, May 22; deep woods, rare."*]
157. *Galbula rufoviridis* *Cab.*—Very common along streams, sitting, Kingfisher-like, on projecting branches.
- [158. *Galbula viridis* *Lath.*—"Santarem, April 10; common near streams."*]
159. *Galbula cyanicollis* *Cass.*—A male taken June 16, 1887, was the only one seen.
160. *Bucco tectus* (*Bodd.*).—A male taken July 1, 1887.
161. *Bucco tamatia* (*Gm.*).—A male and female taken July 11, 1887, in the forests of the lowlands.
[Indistinguishable from a Guianan specimen.—F. M. C.]
162. *Bucco maculatus* (*Gm.*).—A male and female taken July 14, 1884, on the campos.
[These examples agree with Bahia specimens. Apparently the species has not before been recorded from the Amazon.—F. M. C.]
163. *Malacoptila rufa* (*Spix*).—A male taken June 13, 1887, in a dense forest twenty miles from the river.
164. *Monasa morpheus* (*Hahn*).—Common in dense forests on the 'mountain'.

*Allen, Bull. Essex Inst., Vol. VIII, No. 8, 1876, p. 80.

165. *Monasa nigrifrons* (Spix).—A male taken June 22, 1887, near the river.

166. *Chelidoptera tenebrosa* (Pall.).—Common; congregating on dead trees.

[167. *Crotophaga ani* Linn.—Two specimens collected by Smith.—F. M. C.]

168. *Crotophaga major* Linn.—One specimen.

169. *Piaya cayana pallescens* (Cab.).—Common.

170. *Piaya minuta* (Vieill.).—A male, taken June 22, 1887, was the only one seen.

[171. *Coccyzus euleri* Cab.

Coccyzus lindeni ALLEN, Bull. Essex Inst., VIII, 1876, p. 78.

"Santarem, April 19, 1873" (l. c.).

Through the kindness of Mr. William Brewster, Assistant in Ornithology at the Museum of Comparative Zoölogy, I have been enabled to examine the type of *C. lindeni*. It agrees perfectly with a *Coccyzus* from Matto Grosso in the American Museum collection, which, being from the same general region as Cabanis's type, is very probably similar to the bird he described as *euleri*.—F. M. C.]

172. *Rhamphastos erythrorhynchus* (Gm.).—Common in the depths of the palm swamps.

173. *Rhamphastos ariel* Vig.—Very common everywhere.

[174. *Pteroglossus aracari* (Linn.).—"Santarem; common in the forests."*]

175. *Pteroglossus wiedi* Sturm.—Common.

176. *Pteroglossus inscriptus* Wagl.—Not common; two specimens taken on the 'mountain' in 1884; none seen in 1887.

177. *Pteroglossus bitorquatus* Vig.—Four specimens taken in 1884, none seen in 1887.

[178. *Selenidera gouldi* (Matt.).

♂ *Selenidera maculirostris* ALLEN, Bull. Essex Inst., VIII, 1876, p. 81.

A second lot of birds, received from Santarem through Mr. Southwick since the first part of this paper was published, contains, among others not in the collections previously mentioned, one example of this Toucan taken December 6, 1889.—F. M. C.]

179. *Ara hyacinthina* (Lath.).—Very rare; found only about the inland ponds in the dense forests of the interior where it feeds upon the fruit of a palm peculiar to these localities. I obtained three specimens twenty-five miles back from Santarem on June 10, 1887.

180. *Ara chloroptera* Gray.—Common.

[181. *Ara ararauna* (Linn.).—"Santarem."*]

[182. *Ara maracana* (Vieill.).—Three specimens taken in December, 1889, and January, 1890, are included in the second lot of Santarem birds received from Mr. Southwick.—F. M. C.]

183. *Conurus pavua* (Bodd.).—Five specimens taken in June, 1887.

* Allen, Bull. Essex Inst., Vol. VIII, No. 8, 1876, p. 81.

184. *Conurus aureus* *Gm.*.—A female taken July 19, 1884.
 [185. *Conurus roseifrons* *Gray.*.—Santarem, May 28; in small flocks.*]
 186. *Conurus cyanopterus* (*Bodd.*).—Common in 1884, but none seen in 1887.
 187. *Brotogerys virescens* (*Gm.*).—A male and female taken in July, 1884, on the campos back of Santarem.
 188. *Brotogerys tui* (*Gm.*).—One specimen.
 [189. *Brotogerys tuipara* (*Gm.*).—Two specimens collected by Smith in April, 1887.—F. M. C.]
 190. *Amazona festiva* (*Linn.*).—A specimen taken in July, 1887.
 [191. *Amazona ochrocephala* (*Gm.*).—Three specimens taken in January, 1890, received through Mr. Southwick.—F. M. C.]
 192. *Pionus menstruus* (*Linn.*).—A male and female taken in July, 1884, in a dense forest on the 'mountain'.
 193. *Pionus violaceus* (*Bodd.*).—A female taken August 5, 1884, in a dense forest on the 'mountain'.
 [194. *Pionopsitta brachyura* (*Temm.*).—A male taken by Williams September 14, 1883.—F. M. C.]
 195. *Psittacula deliciosa* *Ridgw.*
Psittacula deliciosa *RIDGW.*, Proc. U. S. Nat. Mus., X, 1887, p. 545; Auk, V, 1888, p. 461.
 Three males and four females taken in June and July, 1887.
 [Dr. Hartlaub, to whom I have sent specimens of this bird for comparison with his *P. cyanochlora*, writes me as follows concerning the relationships of the two species: "The *Psittacula* you have sent me is *not* *Ps. cyanochlora* Natt. (type specimen in our collection). The principal difference is this: in your bird the color of the tergum and uropygium has a strong bluish shade. In our *cyanochlora* (*old*) the color of these parts is most brilliant emerald green without the slightest bluish hue. A second difference is this: in your bird the blue on the wing occupies a much larger space, and for this reason is much more conspicuous and brilliant. In the beautifully stuffed specimen of our *Ps. cyanochlora* the blue on the wing is nearly invisible. The green color of the upper parts in our bird is a little more shaded with olivaceous than in yours . . . There is no difference in the extent of the blue under the wing."—F. M. C.]
 196. *Lophostrix cristata* (*Daud.*).—A female taken June 3, 1887, on the 'mountain'.
 197. *Pulsatrix torquata* (*Daud.*).—A female taken July 8, 1887, in the lowlands.
 198. *Rupornis magnirostris nattereri* (*Scl.*).—A female taken June 6, 1887, in the lowlands.
 [Four specimens from Santarem prove on comparison with twenty odd examples of true *nattereri* from Matto Grosso to be clearly intermediate between that form and the northern *magnirostris*. In the grayish color of upper breast and throat they approach *magnirostris*, in the extent and

* Allen, Bull. Essex Inst., Vol. VIII, No. 8, 1876, p. 81.

intensity of the rufous bars they are nearer *nattereri*, and I think they may be better referred to that subspecies.—F. M. C.]

[199. *Asturina nitida* (Lath.).—"Santarem, July 12; in deep woods."*]

200. *Busarellus nigricollis* (Lath.).—Common about the river, nesting in tall trees along the banks.

201. *Heterospizias meridionalis* (Lath.).—A female taken July 28, 1884, in the lowlands.

202. *Urubitinga urubitinga* (Gm.).—Common about meadows.

203. *Spizaetus manduyti* (Daud.).—A specimen taken June 14, 1887, in the forest.

204. *Accipiter bicolor* (Vieill.).—An immature female taken June 21, 1887, in the lowlands.

205. *Geranospiza caerulescens* (Vieill.).—One specimen taken June 27, 1887, near the river.

206. *Falco rufigularis* Daud.—A specimen taken July 28, 1884, in the lowlands.

[207. *Falco deiroleucus* Temm.—One specimen taken by Smith.—F. M. C.]

208. *Gampsonyx swainsoni* Vig.—Common in the lowlands.

[209. *Rostrhamus sociabilis* (Vieill.).—An immature male taken by Williams July 25, 1883.—F. M. C.]

210. *Leptodon cayennensis* (Gm.).—An adult taken June 28, 1887 near the river.

211. *Harpagus diodon* (Temm.).—A male taken July 27, 1884; the stomach contained grass and insect remains.

212. *Milvago chimachima* (Vieill.).—An immature specimen taken June 27, 1887, in the lowlands.

213. *Polyborus cheriway* (Jacq.).—An adult taken near the river June 19, 1887.

[The specimen differs from Texan examples in having less white on the hind neck, interscapulars, and breast, and shows therefore not the slightest approach to *P. tharus*. So far as I am aware there is no previous record of this species south of the Amazon.—F. M. C.]

214. *Cathartes aura* (Linn.).—Very common.

215. *Gyparchus papa* (Linn.).—One specimen taken June 14, 1887, twenty miles from the river.

216. *Ardea egretta* (Gm.).—Very common.

217. *Ardea candidissima* (Gm.).—Common.

218. *Ardea cyanurus* (Vieill.).—An adult female taken June 17, 1887.

219. *Tigrisoma brasiliense* (Linn.).—One specimen.

[220. *Zebrilus pumilus* (Bodd.).—The second shipment received from Mr. Southwick contained one specimen of this rare Bittern, taken at Santarem, February 4, 1890.—F. M. C.]

221. *Dendrocygna discolor* ScL & Salv.—Very common in flocks.

222. *Cairina moschata* (Linn.).—Common.

223. *Columba speciosa* Gm. Found only in flooded palm forests of the densest character.

* Allen, Bull. Essex Inst., Vol. VIII, No. 8, 1876, p. 82.

Columba rufina (Temm.).—Common in the forests of the lowlands, feeding in large flocks amongst the fruit trees.

[224. *Columba locutrix* Wied.

Columba locutrix WIED, Reise Bras., II, 1821, p. 118; — ALLEN, Bull. A. M. N. H., II, 1889, p. 290.

A single specimen of this Dove, collected by Smith March 3, 1889, is with little doubt specifically identical with the type of Wied's *Columba locutrix* (A. M. N. H., No. 6442), and differs from it only in intensity of coloration. The upper surface is darker throughout, the outer margins of the primaries lack the slight grayish edging observable in Wied's specimen, and the lower parts of the Santarem birds are of a more glaucous-vinaceous hue. These differences may be subspecific, they may be seasonal, or they may be in part accounted for by the somewhat faded condition of Wied's type, which long exposure to light has evidently caused.—F. M. C.]

225. *Zenaida jessicæ* Riker.

Zenaida jessicæ RIKER MS., RIDGW., Proc. U. S. Nat. Mus., X, 1887, p. 527. The type was taken June 1, 1887, and two other specimens were taken from a flock feeding on the ground about a plantation.

226. *Columbigallina passerina* (Linn.).—Common about campos and clearings, in flocks of a dozen or more.

[South American specimens are certainly separable from the North American birds to which Linnæus's description of "*rostrum pedibusque flavis*" evidently belongs. Lack of proper material, however, will not permit me to attempt to define the range and relationships of the two or more forms generally classed under the name *passerina*.—F. M. C.]

227. *Columbigallina talpacoti* (Temm.).—Not common.

228. *Engyptila erythrorhax* (Temm.).—Common on the campos; found nesting in July.

[229. *Engyptila rufaxilla* (Rich. & Bern.).—"Santarem, June 6; seen singly and apparently not common."*]

230. *Geotrygon montana* (Linn.).—Two specimens taken on the 'mountain' in 1887.

[231. *Pipilo cumanensis* (Jacq.).—"Santarem, May 10; deep woods, not common."*]

232. *Pipile cufubi* (Pelz.).—Common on the 'mountain' about clearings, usually in pairs or flocks; one specimen was taken July 26, 1884. The native name is *Cufubi*.

[233. *Ortalia motmot* (Linn.).—A specimen taken by Smith March 1, 1889, and a second received through Mr. Southwick collected January 14, 1890.—F. M. C.]

[234. *Odontophorus guianensis* (Gm.).—A specimen collected by Smith.—F. M. C.]

235. *Opisthocomus cristatus* (Lath.).—Very common along the river's banks.

*Allen, Bull. Essex Inst., Vol. VIII, No. 8, 1876, p. 82.

236. *Aramides cayennensis* (Gm.).—Common along the river; often trapped by the natives.

237. *Porzana cayennensis* (Gm.).—Common in the marshes.

[238. *Heliornis fulica* (Bodd.).—One specimen taken by Williams.—F. M. C.]

239. *Jacana jacana* (Linn.).—Very common.

240. *Vanellus cayennensis* (Gm.).—A male and female taken June 22, 1887.

241. *Ægialitis collaris* (Müll.).—A male taken June 24, 1887.

[242. *Himantopus mexicanus* (Müll.).—An adult collected by Smith April 16, 1889.—F. M. C.]

[243. *Gallinago frenata* (Licht.).—Four specimens collected by Smith in March and April, 1889.—F. M. C.]

[244. *Actitis macularia* (Linn.).

Tringoides macularis ALLEN, Bull. Essex Inst., VIII, 8, 1876, p. 83.

"Santarem, April 12; common along the river banks. Specimens were obtained both in mature and immature plumage." (Allen, *l. c.*.)]

[245. *Phæthus magnirostris* (Licht.).—A specimen collected by Smith March 3, 1889.—F. M. C.]

[246. *Tinamus guttatus* Pelz.—A specimen collected by Smith February 4, 1889, I refer provisionally to this species. It differs from an Upper Amazonian example identified by Mr. Salvin as "*T. guttatus*, but with fewer black marks on the lower back," in being less rufous and more olivaceous above, in having all the feathers of the back, rump, wing and tail-coverts banded subterminally with black and spotted with pale rufous, these spots growing more numerous posteriorly. In the coloration of the lower parts, and in size the two specimens agree.—F. M. C.]

247. *Tinamus tao* (Temm.).—One specimen taken August 5, 1884, in a dense forest on the 'mountain.'

248. *Crypturus pileatus* (Bodd.).—Common in the lowlands; its strange note heard only about sunset.

[249. *Crypturus cinereus* (Gm.).—"Santarem, July 6; common in deed woods."*]

250. *Crypturus parvirostris* Wagl.—Common amongst clumps of bushes on the campos; acting very much like a Quail, and as difficult to shoot.

[A female taken June 14, 1884, the only specimen received, I refer with some hesitation to this species of which I have no examples for comparison. In coloration it apparently agrees with descriptions of *parvirostris*, but there is a great discrepancy in the measurements given by Taczanowski (Orn. Peru, III, p. 299) for this species and the measurements of the present specimen, as the following figures show:

C. parvirostris, ♀, (ex Tacz.), wing 118 mm.; bill 23 mm.; tarsus 25 mm.

Santarem specimen, wing 103 mm.; bill 16 mm.; tarsus 25 mm.

*Allen, Bull. Essex Inst., Vol. VIII, No. 8, 1876, p. 83.

It is very probable this bird may prove to be an as yet undescribed form of *parvirostris* from the Lower Amazon.—F. M. C.]

[251. *Crypturus* *sp. nov.*?—A specimen of *Crypturus* collected by Smith March 29, 1889, I am unable to identify with any described species. I hesitate, however to add to the confusion which exists in this group by naming a species which lack of material for comparison would not permit me properly to characterize. For the present, therefore, I simply give the following brief description:

Crown, hind neck, and upper back vinaceous-brown; lower back, rump, upper tail-coverts, tail, greater and lesser wing-coverts, black or brownish black barred with buffy; wings brownish black, the secondaries with buffy spots on their outer webs; throat ochraceous-buff; neck and breast cinereous with a slight brownish wash; flanks blackish, barred with buffy; centre of the abdomen white; under tail-coverts light rufous with black vermiculations. Wing, 6.50; tarsus, 1.80; culmen, 1.20 inches.—F. M. C.]

SUMMER BIRDS OF THE BRAS D'OR REGION OF CAPE BRETON ISLAND, NOVA SCOTIA.

BY FRANCIS H. ALLEN.

IN 'THE AUK' for January, 1887, (Vol. IV, p. 13) appeared an article with the above title by Mr. Jonathan Dwight, Jr. Mr. Dwight's observations were conducted from Aug. 4 to Aug. 16, principally in the immediate vicinity of Baddeck. I may be permitted to make some additions to his list based on my own observations from June 4 to June 12, 1890. My time was much too short and too much occupied with other things to make as careful an investigation as should have been made. Therefore, in spite of the fact that my visit was at a much more favorable time of year than Mr. Dwight's, my list numbers only fifty-five species. His list numbers fifty-nine, but four of them, *Tringa minutilla*, *Ereunetes pusillus*, *Totanus flavipes*, and *Arenaria interpres*, I think it is safe to say were migrants. Another species, *Rallus virginianus*, is marked by an interrogation point, indicating some uncertainty as to its occurrence. Of the fifty-four remaining species, *seventeen* are not on my list, and, what is still more surprising, *eighteen* which I observed are not

on Mr. Dwight's. With the possible exception of *Glaucionetta clangula americana*, all the species which I noted were doubtless summer residents. A combination of the two lists makes a total of seventy-one summer residents.

My additions to the list are as follows.

- Urinator imber*.—One seen on Bras d'Or Lake.
- Glaucionetta clangula americana*.—Quite common.
- Ægialitis semipalmata*.—One taken.
- Pandion haliaëtus carolinensis*.—A few observed.
- Picoides arcticus*.—One observed.
- Contopus borealis*.—Quite common.
- Empidonax minimus*.—Not uncommon.
- Perisoreus canadensis*.—A few observed.
- Spinus pinus*.—A few observed.
- Vireo solitarius*.—Not common.
- Helminthophila ruficapilla*.—Not common.
- Dendroica castanea*.—One seen June 4.
- D. striata*.—Not common.
- D. palmarum hypochrysea*.—A few observed.
- Seiurus aurocapillus*.—A few observed.
- S. noveboracensis*.—One or two observed.
- Regulus calendula*.—Common.
- Turdus ustulatus swainsonii*.—Quite common.

The following are the birds on Mr. Dwight's list (besides the five previously mentioned) which did not come under my notice.

- Larus philadelphia*.
- Ardea herodias*.—I saw one at Northeast Margaree, 28 miles northwest of Baddeck.
- Gallinago delicata*.
- Dendragapus canadensis*.
- Bonasa umbellus togata*.
- Haliaëtus leucocephalus*.—An Eagle, too far off for identification, was seen chased by a Crow, June 11, near the Big Baddeck River.
- Falco sparverius*.
- Coccyzus* sp.?
- Sphyrapicus varius*.
- Spizella socialis*.
- Melospiza georgiana*.
- Habia ludoviciana*.
- Ampelis cedrorum*.
- Vireo olivaceus*.
- Sylvania pusilla*.
- Parus atricapillus*.
- Regulus satrapa*.

Attention should be called to Mr. Dwight's note in 'The Auk' for April, 1889, (Vol. VI, p. 186) in which he says that the Terns obtained by him proved to be *S. hirundo* instead of *paradisæa* as in his list and remarks.

I may add that I met with a single *Botaurus lentiginosus* at Northeast Margaree, where I spent one rainy morning.

During my stay at Baddeck I was particularly struck with the abundance of Terns, Spotted Sandpipers, Kingfishers, Eave Swallows, Yellow, Myrtle, and Magnolia Warblers, and Ruby-crowned Kinglets, and with the absence of Red-eyed Vireos, Wood Pewees, Yellow-bellied Woodpeckers, and Cedarbirds.

Of the general character of the country and the woods Mr. Dwight has written faithfully and interestingly. The season this year was a very late one in Cape Breton. At the time of my departure, the trees had not all leafed out, the grass was still brown on the hills, and the few apple-trees which there were had not begun to blossom. The ground was in some places yellow with dandelions. I found a very few belated blossoms of the mayflower, *Epigæa repens*. Rhodora was in full bloom, but Labrador tea had not yet opened. It was quite cold most of the time, but I cannot say how cold, as I saw no thermometer. I was told that snow fell on the Baddeck Mountains on the night of June 9.

On June 5 I visited a small island in the Bras d'Or Lake, over which a great many Terns were flying, but though I came across three or four hollows scratched in the sand, no eggs were found, and it was probably too early for them. On June 9 I found three Spotted Sandpipers' nests, each containing four eggs, on the 4th a Snowbird's containing young, and on the 11th another Snowbird's with one young one and two eggs. On the 9th a young Robin, just able to fly a little, was seen by the side of the road.

A FURTHER REVIEW OF THE AVIAN FAUNA OF CHESTER COUNTY, SOUTH CAROLINA.

BY LEVERETT M. LOOMIS.

(Continued from p. 59.)

186. *Scolecophagus cyanocephalus*. BREWER'S BLACKBIRD. — As has already been reported (Auk, Vol. IV, Jan., 1887, p. 76), three males and two females were captured Dec. 9 and 10, 1886. These birds were a part of a little troop of over a dozen that were then occupying a field in the outskirts of the town of Chester. The weather at the time was exceedingly rigorous—the opposite of that prevalent the past seasons. None have been observed since.

187. *Quiscalus quiscula æneus*. BRONZED GRACKLE. — At the outset of my ornithological study it so happened that the Crow Blackbirds taken were typical *quiscula*. As this was the form ascribed to the region by the books, a thorough investigation was not then deemed necessary. Subsequently the continued recurrence of birds essentially Western induced further inquiry, and the outcome was the discovery of *æneus* in November, 1887 (Auk, Vol. V, Jan., 1888, p. 113). Since then, whenever the opportunity has offered, the matter has been diligently followed up, and the result, though perhaps fortuitous, indicates a superiority of numbers for *æneus*. While Crow Blackbirds appear in the migrating seasons in vast droves, conveying an impression of extreme abundance, their dispersion is not general. A migration may be worked through without many being actually met with, although multitudes may be reported from adjoining neighborhoods. As at present advised, the Bronzed Grackles arrive about November 1, and during this month their southward migration is at its height. In the depth of winter occasional flocks are seen. Usually they are of small extent. In February the movement northward is in full progress, and it continues on through March. I have no knowledge of their breeding here.

149. *Calcarius pictus*. SMITH'S LONGSPUR.—Since the one was killed with a stone in December, 1880, a second specimen has been secured. This bird—an adult female—was shot Feb. 9, 1889. I have several times thought I have seen stray individuals passing overhead, but my acquaintance with this species is too limited to speak with certainty.

64. *Ammodramus savannarum passerinus*. GRASSHOPPER SPARROW.—While later observations show that this Sparrow occurs in every month of the year, yet it is not truly a 'permanent resident'. The birds of December and January are rare stragglers that have tarried behind after mild autumns, or have been tempted from the south, presumably from the lower part of the State, by the clemency of the weather. Ordinarily they appear in force about the beginning of the second week of April, although

adventurous scouts sometimes arrive as early as February. From the first coming of the bulk in April, onward into September, they are very common; afterwards there is a diminution in their forces, and toward the close of October only stragglers are to be found, which sometimes linger on into November. My dates for the first two winter months are Dec. 5, 14, 1885; Jan. 22, 1887; Dec. 25, 1889; Jan. 2, 1890. The song period lasts without interruption for about five months.

151. *Ammodramus leconteii*. LECONTE'S SPARROW. — The statement in my second list, that Leconte's Sparrows were common "winter residents," was fully borne out from the time of their discovery in November, 1881, to the close of the season of 1884-85. Since then they have been almost wholly absent. In the two winters immediately following not a single example rewarded my search. Individuals were captured March 2 and 3, 1888; Dec. 25, 1888; Dec. 19, 1889. Except one other, seen Dec. 25, 1889, these were all that fell under my observation during this interval. Explanation of their absence is to be sought, I think, not in their failure to journey southward, but in the transposition of the local centre of abundance to some other quarter not far remote. The weather can hardly be said to have exerted a governing influence over their movements, for the meteorological conditions in these years have varied greatly, and seasons have been not unlike those during the periods of greatest abundance. The presence of the two in March, 1888, is significant. The distribution of these Sparrows, hereabouts, appears to be very restricted. I have thus far discovered them only in a narrow stretch of country, about three miles in length, lying east of the town. The earliest record I have is Nov. 11, 1881, and the latest March 30, 1885. The average duration of their stay, so far as ascertained, in the years of abundance was above four months.

152. *Peucaea aestivalis bachmanii*. BACHMAN'S SPARROW. — It is only of recent years that I have become aware of the existence of this species in this locality. As so much time has been devoted of late to other fields during summer, I am not able to throw much light upon its abundance or upon the times of its arrival and departure. It appears, however, to be a regular visitant, coming soon in the spring and spending the breeding season. March 21, 1888, is the earliest date of its appearance I have memorandum of.

153. *Habia ludoviciana*. ROSE-BREADED GROSBEAK. — In fall Rose-breasted Grosbeaks are apparently of but casual occurrence. In spring they visit us regularly, the first males arriving shortly after the 15th of April. Loiterers tarry behind until about the middle of May. In some years they are decidedly common. They are found singly and in small companies. My previous assertion as to their partiality for high ground does not hold good. If latest experiences were taken as a criterion, the contrary rather would be found to be true. On their northward journey they are inclined to be musical.

154. *Spiza americana*. DICKCISSEL. — I entered this Finch as a "summer resident" in the second list on the strength of its having been ob-

served commonly in certain restricted situations near the town in 1883 and 1884. I supposed then that previously it had been overlooked, but I am now constrained to believe that its appearance was sporadic, as it has not been seen since in the six years that have elapsed. It is remarkable that it should come so abruptly, be common for two seasons, and then utterly abandon the locality.

56. *Vireo solitarius*. BLUE-HEADED VIREO.—The Blue-headed Vireo is a regular, but not common migrant. In spring it occurs in April (4 to 21). In fall, it returns about the middle of October—15th the earliest date—and abides until November. Laggards sometimes linger on into this latter month. These Vireos sing finely in April, and occasionally, though imperfectly, in autumn. While uttered with equal force and unction, the musical efforts of the vernal performers (intermediates) seem to lack the penetrating power peculiar to *alticola* as heard in its mountain home. Still they may not attain their complete song when migrating.

All the spring specimens that have been taken are intermediate between *solitarius* and *alticola* (their upper parts beyond the rump being strongly washed with plumbeous), while the majority of the autumnal ones are typical *solitarius*. Taking the Pickens examples (Auk, Vol. VII, p. 126) as a basis of comparison, I am impelled to rank these intergrades with *solitarius*. The uniform deep black of the bill in adult *alticola* seems to be a more potent character in the discrimination of the two forms than the variable plumbeous veiling of the upper portions, which, however, in extreme *alticola* is always diagnostic. In Chester specimens—both in spring and fall—the lower mandible invariably displays plumbeous. In some the plumbeous predominates; the tip only being black. The black of the whole bill is of a slaty cast, not an intense black as in the mountain race. Mr. Ridgway has informed me that the examples of *solitarius* which have passed under his notice have invariably had the basal half, at least, of the lower mandible plumbeous.

189. *Helinaia swainsonii*. SWAINSON'S WARBLER.—A male was taken Aug. 30, 1887, in the neighborhood of the town (Auk, IV, 347). Whether this individual was simply an estray from the seaboard or a transient from an inland habitat can only be surmised. It is worthy of note that a terrific storm prevailed ten days before along the coast of North Carolina, and that the largest flock of Ricebirds—chiefly coastwise migrants in South Carolina at this season—ever witnessed here in the southward migration was met with Aug. 22—two days after the storm.

26. *Helmitherus vermivorus*. WORM-EATING WARBLER.—This Warbler has been noted from July 25 to October 6, and from April 19 to May 12. So far as known, it does not breed. It appears to be more numerous in some years than in others. Viewed in the most favorable aspect, it does not reach higher rank in the scale of abundance than tolerably common. During its transits it is seen at intervals rather than continuously.

190. *Helminthophila pinus*. BLUE-WINGED WARBLER.—A male was obtained April 30, 1887. This is the only instance of its capture in this vicinity.

191. *Helminthophila chrysoptera*. GOLDEN-WINGED WARBLER.—The following are the only data I possess of its occurrence: a male, Sept. 13, 1886; a female, Aug. 20, a male, Sept. 22, 1887; a male, Aug. 28, 1888.

192. *Helminthophila celata*. ORANGE-CROWNED WARBLER.—Two have been taken: a male, Oct. 21, 1887, and a female, April 24, 1889. This one alone of the *Helminthophilæ* has been procured during both migrations.

144. *Helminthophila peregrina*. TENNESSEE WARBLER.—The summary of later specimens secured, given below, shows that this member of the genus is not wholly uncommon here. Whether it is as plentiful every fall, can be satisfactorily determined only by a continuance of the methodical study of woodland Warblers conducted during the seasons when the specimens were taken. It has not been detected in spring.

1886: Sept. 8, one; 9, two; 28, one; Oct. 1, one; 2, two; 6, one; 9, one.

1887: Oct. 4, two; 5, five; 6, one; 15, one.

1888: Oct. 3, one; 8, two; 9, one.

35. *Dendroica tigrina*. CAPE MAY WARBLER.—Cape May Warblers are not common in this vicinity. April 15 to May 3, and October 4 to 26, are the limits within which they have been obtained. In autumn they become extremely fat. Two females, shot Oct. 4, 1888, were so obese that I was completely puzzled for a moment as to what they really were.

34. *Dendroica maculosa*. MAGNOLIA WARBLER.—Migratory; rather common. Journeying northward, they pass through during the first two weeks of May. Coming southward, they reappear in September—Sept. 3, the earliest instance. Until the closing week of this month they are seen but infrequently, the main body not arriving until about Oct. 1. Before the end of a fortnight all disappear. In song during their spring visitations.

193. *Dendroica cærulea*. CERULEAN WARBLER.—The work of recent years has proved that this bird is a regular migrant, though rather rare. It has occurred in spring from April 13 to 30, and also late in summer and in fall, Aug. 8 to Oct. 22. Its presence so soon in August leads to the inference that it breeds near at hand in the mountains.

33. *Dendroica pensylvanica*. CHESTNUT-SIDED WARBLER.—In spring they pass quickly, appearing the last week of April and disappearing by the 15th of May. They do not seem to be very common during this migration. Returning, the first reach here about the middle of August—16th and 17th in 1887. Their stay is prolonged, normally, until about the second week of October—Oct. 19, 1887, latest record. During the southward passage they become very common, especially in September. Except in spring, only those in the incomplete attire of the young have been procured. On the way north they sing somewhat.

194. *Dendroica castanea*. BAY-BREASTED WARBLER.—Has been taken but twice: May 14, 1887; May 5, 1888. Both were males.

31. *Dendroica blackburniæ*. BLACKBURNIAN WARBLER.—Rare during the northward movement; very common in the southward. The former progress apparently takes place at the end of April and during the

early part of May, and the latter, from about the beginning of the second week of August to about the middle of October—Aug. 8, Oct. 22, the extremes noticed. The greatest rush usually occurs during the fortnight centring around October 1. These late comers are supposed to be Northerners. Individuals often grow exceedingly fat in autumn. They sing while northbound.

195. *Dendroica dominica albilora* SYCAMORE WARBLER.—The *Dendroica dominica-albilora* group is represented in this section by both *dominica* proper and *albilora*. The two forms, in fall at least, are about equally numerous. Collectively, they are rather common, especially during the migrations. The term of sojourn extends from the end of March (the precise time varying in different years) to about the first of October (March 22-Oct. 4). It has not been ascertained whether true *albilora* breeds here; for the exact status of the breeding birds yet awaits determination. The breeders leave early, and a period of absence intervenes between their going and the coming of the August and September migrants. As would naturally be anticipated, the locality furnishes a goodly supply of intermediates.

28. *Dendroica virens*. BLACK-THROATED GREEN WARBLER. — A spring and autumn migrant; tolerably common. March 31-May 9, September 20-October 24, are the earliest and latest dates of its capture. It is eminently an October Warbler during fall. In full song in spring.

196. *Dendroica kirtlandi*. KIRTLAND'S WARBLER.—The taking of a female, Oct. 11, 1888, has previously been noticed in this journal (Vol. VI, Jan., 1889, p. 74). The geographical position of South Carolina, midway between the Bahama Islands and the States of Ohio and Michigan, suggests that this bird, which was here late in the southward migration, was something more than a mere wanderer.

38. *Dendroica palmarum*. PALM WARBLER.—As a winter resident the Palm Warbler can scarcely be regarded more than a straggler. Through the past three winters only one was seen, which shows that protracted mild weather does not exert a controlling influence over its presence by causing greater abundance. In the southward migration it is abundant. The first begin to appear about the second week of September. Usually by the latter part of October the bulk have passed. In spring it remains through April,—the chief month of its northward movement,—but it does not become as plentiful then as in autumn. *D. hypochrysea*, in winter, is even rarer and more uncertain. In fall, also, it is rare, but during April it seems to be as numerous as *palmarum*.

40. *Seiurus aurocapillus*. OVENBIRD. — Migratory; common. A month, from about the middle of April to the middle of May, is consumed in the northward passage, and over two months, from the beginning week of August (7th earliest capture) to the middle of October, in the southward. A belated female, taken Oct. 29, is an extreme instance of tardiness. While passing through in spring the ordinary song notes are vigorously pronounced.

197. *Seiurus noveboracensis notabilis*. GRINNELL'S WATER-THRUSH.—

Considered from the standpoint of the widened diagnosis of the 'Manual of N. A. Birds,' the prevailing Water-thrush of this locality is *notabilis*. With the exclusion of a single example, all that have been taken are of medium and small size. True *noveboracensis* is a *rara avis* in this section. Intermediates are more common. Some of them are so fairly midway between the two forms as to render impracticable their being assigned to either. Migrant only; April 28-May 28; September 1-29. Rather common.

198. *Seiurus motacilla*. LOUISIANA WATER-THRUSH. — This species has been taken only upon three occasions, viz., Aug. 10, 1887; July 25 and 31, 1888.

42. *Geothlypis formosa*. KENTUCKY WARBLER. — It is a periodic visitant at the close of April and early in May, and again during the first part of September; but it is rather rare. Sings with effect in spring.

199. *Geothlypis agilis*. CONNECTICUT WARBLER. — The general rarity of spring specimens, especially enhances the value of the solitary one (a male) in my collection, labelled May 10, 1889.

146. *Sylvania mitrata*. HOODED WARBLER. — Up to the present the Hooded Warbler has not been discovered breeding, but it is expected that a thorough exploration of the river region will establish the fact. It is quite common during both migrations, having been observed from April 16 to May 6, and Aug. 6 to Oct. 17. The last date is exceptionally late, the season properly closing with September. While *en route* to their breeding grounds, they sing.

200. *Sylvania pusilla*. WILSON'S WARBLER. — In all these years but a single individual, shot May 10, 1887, has fallen to my gun.

45. *Sylvania canadensis*. CANADIAN WARBLER. — Rare or casual in fall (September); not uncommon at times in spring (first two weeks of May), when they render themselves conspicuous by their frequent singing.

46. *Setophaga ruticilla*. AMERICAN REDSTART. — Between my latest spring (May 21) and earliest summer (July 10) record, there is a gap of but seven weeks. The July birds are few in number, and usually appear during the last week of the month. Through August decided movements take place, and about the middle of September the full tide reaches here. Then for a while they are among the most abundant of sylvan inhabitants. By the first of October a considerable decline has been witnessed, although they are still common. After the third week, at farthest, they are no longer seen. From about the second week of April (April 10, first) through the third week of May, they have been met with in spring. During this vernal progress they become very common, and are not infrequent musicians.

20. *Thryothorus bewickii*. BEWICK'S WREN. — Breeds very sparingly. They are conspicuously common (perhaps more so in certain seasons than in others) during their migrations, which occur, mainly, in the latter part of September, in October, February (particularly the last portion) and March. In December and January, in some years, they

are rather common, and in others they are almost wholly wanting—the local centre of abundance having been transferred to some other locality. This shifting of habitat does not seem to be imputable to cold, as it was illustrated in a marked manner the past winter, 1889-90. For a week, at the close of December, 1889, there appeared to be a slight influx of these Wrens independent of the general migratory movement. In spring and autumn, and during genial days in January and February, they are exquisitely vocal.

201. *Troglodytes ædon*. HOUSE WREN. — Abundant as this bird is said to be in some parts of the State, I have seen but two, and these, May 4, 1888.

143. *Cistothorus stellaris*. SHORT-BILLED MARSH WREN. — No special search has been made for this Wren. Three, however, have been incidentally shot since the original one was procured—Oct. 8, 10, 1885; Oct. 5, 1888.

16. *Sitta canadensis*. RED-BREASTED NUTHATCH. — For a long time the idea of extreme rarity was associated with the name of this Nuthatch. Over nine years passed before the example of the 'Partial List' was duplicated. Latterly so many have been collected that it now seems that they must have been overlooked in former years. The first intimation of their comparative abundance came with the securing of three males in October, 1886; two on the 2d, and the remaining one on the 13th. September 28, 1888, a female and two more males were added to the previous number; and in 1889 a female, Oct. 19, a male, Dec. 14, a female and three males, Dec. 21. The last belonged to a little party that was quartered in a pine grove along with a company of Brown-headed Nuthatches, several White-breasted Nuthatches, and a group of Pine Warblers. This was the first time I ever had the pleasure of finding these three Nuthatches together in the same piece of woods, and the experience of shooting them in succession was highly novel. Boreal weather is manifestly not to be accounted the cause of their advent, for the thermometer ranged around 70°F. at midday for some time before and after.

202. *Turdus fuscescens salicicolus*. WILLOW THRUSH. — A typical male was secured Oct. 5, 1888 (Auk, VI, 194). Until an exhaustive study of the 'Wood Thrushes' (*Hylocichla*) has been made, the true position of this Western subspecies in this section must remain uncertain.

203. *Turdus aliciae bicknelli*. BICKNELL'S THRUSH. — Of this miniature form of the Gray-cheeked Thrush, two characteristic exemplifications have been obtained—a male, May 6, and a female, Sept. 17, 1887. *T. aliciae* is common, and is here as a temporary resident during the first three weeks of May and from the last of September to about the 15th of October.

(To be concluded.)

THE PRESENT STATUS OF THE IVORY-BILLED WOODPECKER (*CAMPEPHILUS PRINCIPALIS*).

BY EDWIN M. HASBROUCK.

THE LAST fifty years of American ornithology have witnessed the gradual diminution of several of our species of birds once extremely common, and with two in particular this amounts to practical extermination. The first of these to disappear was the Great Auk (*Plautus impennis*) last heard of in 1844; the second, the Labrador Duck (*Camptolaimus labradorius*), was formerly common as far south as Chesapeake Bay, but is now exceedingly rare and perhaps extinct.

For some years it has been a common belief that two more species were fast following in the same direction; the Carolina Paroquet (*Conurus carolinensis*), and the Ivory-billed Woodpecker (*Campephilus principalis*). Mr. Chapman, in his search for the Paroquet, proved conclusively that it is by no means so nearly exterminated as formerly supposed, and in a paper* before the Linnæan Society of New York showed that it is still more or less common in the wilder and more remote parts of Florida; and an attempt will be made to show that the bird in question, while by no means as abundant as *Conurus*, is still found in greater or less numbers in many parts of the southern United States, the Mississippi Valley, and in Texas. By many the Ivory-bill and Paroquet are associated together on account of their rarity and almost identical distribution, and for this reason the two are cited here as parallel cases.

The collection of data concerning the relative abundance and distribution of *Campephilus principalis* has for some time past been to me of considerable interest, but not until recently has the material taken such shape as to warrant publication. My personal experience with the species has been extremely limited, although I have had the pleasure of meeting with it in central Florida on one memorable occasion referred to farther on; for the present, however, I shall confine my attention to the former and present actual distribution of the Ivory-billed Woodpecker in the United States.

* Proc. Linn. Soc. New York, March 7, 1890.

The genus *Campephilus* is essentially a tropical one, embracing thirteen species, all confined to America, there being nothing approaching it in the Old World. Of these, two only are closely related to *principalis*: the Imperial Woodpecker (*C. imperialis*), the largest of the genus, found in the Sierra Madre region of Mexico (the extreme western slope of the Sierra Madre Mountains, on the eastern and western borders respectively of the provinces of Durango and Sonora), and *C. principalis bairdii*, a subspecies of the Ivory-bill found in northern Cuba. *Principalis* will, therefore, be readily recognized as the northern representative of the entire genus. There is a chance that *imperialis* follows the mountain region northward into southern Arizona, as record * shows that it has been taken in Mexico within sixty miles of the northern border, but as yet no instance is known of its occurrence within the limits of the United States.

In regard to nesting habits the same may be said as of other species seldom met with,—‘little enough is known about them’; consequently a few notes derived from other sources may not come amiss. In an article by Maurice Thompson entitled ‘A Red-headed Family,’ is the following interesting account of the nest:

... “I looked and saw two large round cavities, not unlike immense auger holes, running darkly into the polished surface of the stump, one about six feet below the other, the lower twenty-five feet above the ground. . . . I reached the determination that it was my duty to rob that nest in the interest of knowledge. . . . I made minute examinations of the rifled nest, and also tore out the other excavation, so as to compare the two. They were very much alike, especially in the jug shape of their lower ends. From a careful study of all the holes (apparently made by *Campephilus*) that I have been able to find in either standing or fallen trees, I am led to believe that this jug shape is peculiar to the Ivory-bill’s architecture, as I have never found it in the excavations of other species, save where the form was evidently the result of accident. The depth of the hole varies from three to seven feet, as a rule, but I found one that was nearly nine feet deep, and another that was less than two. Our smaller Woodpeckers, including *Hylotomus pileatus*, usually make their excavations in the shape of a gradually widening pocket, of which the entrance is the narrowest part.”

In the possession of Maj. B. F. Goss, of Pewaukee, Wisconsin, is a set of five eggs taken in Jasper Co., Texas, near the

* Specimen in Smithsonian Institution.

Neches River on May 3, 1885, which are said to be the only ones known in collections. Mr. Goss informs me that the nest was "situated forty feet from the ground, with the excavation nearly two feet deep and large enough to insert the arm; the eggs lay on the bare wood, are quite pyriform in shape, glossy white, and measure 1.44×1.06 , 1.45×1.06 , 1.44×1.07 inches."

Audubon gives the number laid by this species as eight; others, from five to eight; while according to Coues six may be considered as an average; and in the nest found by Mr. Thompson, already mentioned, five were found to be the complement. The only account concerning the young that has been found is that by Mr. W. E. D. Scott, in 'The Auk' (Vol. V, 1888, p. 186) under date of March 17, 1887, at Tarpon Springs, Florida, which is quoted substantially as follows:

"Found nest of Ivory-billed Woodpecker, and obtained both parent birds and the single young bird which was the occupant of the nest. . . . The opening was oval in shape, being three and one half inches wide and four and a half inches high. The cavity . . . was cylindrical in shape and a little more than fourteen inches deep. The young bird in the nest was a female, and though over one third grown, had *not yet opened its eyes*. The feathers of the first plumage were apparent, beginning to cover the down, and were the same in coloration as those of the adult female bird."

The first definite records of its distribution and habits are those of Audubon and Wilson, both of whom give pleasing accounts of this species, though they appear to have approached its region of habitation from different directions. The former, in his 'Ornithological Biography,' published in 1832, says: "We first met with this magnificent Woodpecker near the junction of the Ohio with the Mississippi River, where it is frequently observed south from this locality, and northward towards the Missouri River." Wilson* informs us that he "first observed it twelve miles north of Wilmington, North Carolina," and here it may be well to call attention to the fact that this is the most northern actual record for the Atlantic coast. In a paper by Coues and Yarrow,† however, on the natural history of Fort Macon, North Carolina, published in 1878, is the following statement: "Information was

* Birds of America.

† Proc. Acad. Nat. Sci. Phila., 1878, 21-28.

received from an apparently respectable source of the occurrence of this species whose appearance was described with tolerable exactness, but the statement is given for what it may be worth, no specimen having been seen." In preparing the map, therefore, it has been deemed best to include Fort Macon within the area of distribution, which, almost to an absolute certainty, marks the northern range in the east.

The records of Audubon and Wilson are in the thirties, and from that time on various accounts of the relative abundance of *Campephilus* throughout its habitat have been published; the majority relating to its occurrence in the Gulf States, where its true home may be said to be; but it has been the aim in this paper to show the most northern records and those relating to its general distribution for the past ten years. To find the former range was a comparatively easy task, as it was necessary only to search the literature, while to determine its present status, not only were published records consulted, but many letters were sent to competent persons in the Southern States and the Mississippi Valley requesting such information as could be given in regard to it. In using the material collected, many allowances had to be made, — some replies were vague, almost worthless, while others assisted materially in preparing the present paper, but to all who so courteously responded I wish to express my warmest thanks and appreciation, and especially am I indebted to my friend, Mr. Robert Ridgway, for the courtesy shown in many ways. In arranging the dates, the dividing line has been placed at 1880, all records prior to that being considered as coming under former distribution, and all within the past decade as showing the present distribution.

On the map all that area bounded by the heavy black line represents the region as a whole in which the Ivory-bill has been observed, the part in shade represents an attempt to outline the present distribution, based on the records for the last ten years and the information received from various sources, while the single isolated spots in black show the localities of comparatively recent capture. A careful examination of recent records shows that *Campephilus principalis* is now confined to the low swamp country along the coast. This area, for the most part below one hundred feet in elevation, is characterized by dense forests of bald cypress (*Taxodium distichum*) in strong contrast to the pine barrens of the uplands. It will be convenient, therefore, to con-

sider the hundred foot contour as the line marking in general the boundary between the cypress swamps and the pine barrens, and consequently the boundary of the present distribution of the Ivory-billed Woodpecker.

As before stated, the species is confined almost entirely to country below the hundred foot line, but there are a few extralimital records that are worth considering; these are the Mississippi Valley records for Newport, Arkansas, (elevation from one hundred to five hundred feet above the sea), and Fayette and Kansas City, Missouri, (altitude six hundred and fifty and seven hundred and fifty feet respectively) which are explained by the fact that in this vast river basin the slope is so gradual that the cypress swamps in which the bird delights extend farther into the interior of the country.

Beginning now in North Carolina, with Fort Macon and Wilmington, we pass into the pine barrens* of upper South Carolina where Dr. Burnett† mentions it as being resident in 1851. In the collection of Mr. G. N. Lawrence, is a pair taken near Charleston about forty years ago by Mr. John G. Bell. Mr. Lawrence writes that at the time they were procured the species was quite abundant, but that few, if any, are to be found there at the present time.‡ Coues mentions it as "Resident but exceedingly rare," and "chiefly confined to the lower country." Mr. Walter Hoxie writes that prior to 1870 it was common on the Hunting Islands, but is now an exceedingly rare visitor; one specimen was taken on Johnson's Island in March, 1879 or 1880, and two years ago (1888) one was seen on Pritchard's Island.

In Georgia the records are extremely scarce, the only one at hand being the nest found by Maurice Thompson, already cited; his was in the southeastern part of the State in the Okefinokee swamp, but lacks the important item, the date.

Next in line comes Florida. In no other State is the pine line § so well marked or so closely connected with the distribu-

* The pine barrens of upper South Carolina consist for the most part of the following counties: Burnwell, Darlington, Marion, Marlborough, Orangeburg, and Sumter.

†Proc. Bost. Soc. Nat. Hist. IV, 115-118.

‡Proc. Bost. Soc. Nat. Hist. XII, 1868, 104-127.

§ It may be well to state specifically what is termed the pine line. To begin with such a line is extremely difficult, if not next to impossible, to locate, as pine penetrates the cypress in the low lands for a greater or less distance at every point; while, on the other hand, cypress ceases entirely as soon as higher ground is reached, and it is this line marking the limit of the cypress that I have attempted to show and to define.

tion of this Woodpecker, and, as might be expected, many records are to be found; in fact, so admirably adapted to the wants of this bird is by far the larger portion of the State, that there are here more actual instances of its capture than in all the rest of the States east of the Mississippi.

It will consume too much time to mention more than a few important records. At Cedar Keys it was taken on January 31, 1859 (specimen in Smithsonian Institution). Mr. S. C. Clarke* writes: "In 1872 I procured a male near New Smyrna, Volusia County"; he also heard some in 1870 at Merritt's Island. Mr. Scott states (in the article previously referred to), "the same day that the nest was found eleven were counted in the swamp in question, sometimes four or five being in sight at once"; while in 'Forest and Stream,' XXIV, 427, 'W. A. D.' of Hawkinsville, Orange County, writes that he and his two brothers had killed between twenty and twenty-five of these birds during the past ten years, for a taxidermist in Palatka. The last one seen was on May 4, 1885. While in Florida in 1886, the writer saw one of these self-same birds stuffed and mounted. On March 8, 1886, Mr. H. A. Kline† killed one on St. Mark's River, near Tallahassee, and a few weeks previous saw two others in the same locality. In the Smithsonian collection is a magnificent specimen taken by Major Byrnes, at Bristol, Liberty County, December 7, 1889. For the present year (1890) the records, so far as known, are two in number: on March 27, an acquaintance, Captain Gregg, a veteran hunter, informed me that he had recently returned from a hunting trip on the Wacissa River, in Jefferson County, and that among other birds, the Ivory-billed Woodpecker was quite common; that he had killed two, but not knowing how to skin them, they were thrown away. I questioned Captain Gregg closely regarding the birds, and there is no doubt in my mind that they were *Campephilus*. The other specimen was taken by Mr. Frank M. Chapman on the Suwanee River, twenty miles from the mouth, on March 24. Mr. Chapman's testimony is that this was the only bird met with during the three weeks passed on the river and, from the information gathered that it is there an extremely rare bird. The most southern record for the State is furnished by Mr. William Brewster, who obtained three specimens from Dade County in 1889, while a single individual was offered to Mr. Charles B.

* Forest and Stream, XXIV, 367.

†Forest and Stream, XXIV, 163.

Cory, claimed to have been shot near Fort Myers, on the Caloosahatchie River. Mr. Frederick Ober, in his report of the trip through the Okeechobee region,* claims to have seen what he took to be *Campephilus*, but failed to secure a specimen. It is probable that it occurs there, but as expeditions into this region are few, it is not surprising that there are no records. In the collection of Mr. Brewster † is a series of fourteen specimens taken from 1876 to 1889 inclusive, all of which, with the exception of two taken in 1876, were collected within the past ten years; these, together with the foregoing records, prove beyond doubt that the State of Florida is the centre of abundance of the Ivory-bill.

My own experience with the species, although limited, is as follows:—I had been spending the winter of 1885-1886 in Florida, and during the month of March had made my headquarters at the home of my friend, Mr. E. G. Smith, on Big Lake George. One of my favorite trips was up Juniper Creek, a small stream emptying into the head of the lake one mile west of the famous Volusia bar; the country through which it passes is one of those wild, semi-tropical swamps, so common throughout the Gulf States. Anhingas (*Anhinga anhinga*), Little Blue Herons (*Ardea carulea*), Egrets (*A. egretta*) and Limpkins (*Aramus giganteus*) were by no means uncommon, and it was in search of these that Mr. Smith and I took a boat on March 26 and started for this locality. We took with us as oarsman 'Jim' (one of the help on the place), who had done considerable collecting for me, and in whose accuracy as a marksman I had some confidence. We had gone perhaps a mile up the stream when a new and peculiar note sounded from the forest, which I can only liken as do other writers to the false high note of a clarinet; hastily landing I immediately went in search of its author (as I had not the faintest idea from what source it proceeded), but owing to the thickness of the underbrush it was next to impossible to penetrate farther than a few yards and, the noise ceasing entirely, I returned and we continued up the stream. Noon found us eating our lunch on a small knoll some four miles from the lake in the very thickest of the swamp. Around us stood gigantic cypress trees whose trunks and branches were adorned with thousands of air plants, and from which the myriads of vines which twined and twisted, and the gray Spanish moss hanging in long

*Forest and Stream, April 23, 1874.

†See tabulation of records.

festoons, cast a gloom and solemnity hard to realize by one who has never seen it, yet lending a certain grandeur that the student of nature is not slow to appreciate. Scattered through the swamp and giving a tropical air to the whole were countless palmettoes (*Sabal palmetto*) towering to a height of seventy-five or a hundred feet, and it was in a little clump of these that we were taking our nooning. Suddenly that strange note sounded once, twice, three times,—approaching nearer with each repetition. It sounded exactly like the note of the White-bellied Nuthatch, only much louder and stronger, and grasping my gun, I remarked that I was going to kill the biggest Nuthatch on record. Hardly had the words left my lips when, with a bound and a cackle, a magnificent male Ivory-bill alighted in the trees directly over our heads; for a moment I was too astonished to speak, but in that moment it was joined by its mate, and the two began hammering away at the palmetto trunks. It was impossible for me to shoot without changing my position, while to move would be to alarm the birds; Jim saw my dilemma and whispered that he could kill them from where he sat, so passing him the gun I watched him take aim. He fired but missed, and the Woodpeckers bounded away into the thickest part of the swamp; hastily snatching the gun I started in pursuit, but failed to find them. Day after day I returned to the same locality in hope of securing them, but without success, and on April 7 I was obliged to leave for home without adding this much coveted species to my collection.

Mr. Hoxie, who has spent much time in the haunts of the Ivory-bill in Florida, informs me that the Seminole name for it is 'Tit-Kä,' and there is a tradition that during a contest of strength it tapped so hard with its bill that the blood and brains flew out of the back of its head.

In Alabama Gosse* mentions it as not at all rare at Dallas in 1859; in 1865 it was taken on the west side of the Tombigbee River in Marengo County, and in 1866 Mr. W. C. Avery shot a female at Millwood on the Black Warrior River, ten miles west of Greensboro. At Crump Springs on the Buttahatchie in the spring of 1886 Mr. G. V. Young observed it nesting in a dead pine, some seventy feet from the ground, and in the fall of 1889 he identified one in Wilcox County while on a deer hunt. It is rare and seldom seen, but confined to the lower swamp country.

* Gosse, 'Letters from Alabama,' 1859, 91.

In Mississippi Prof. Wailes* speaks of it as follows:

"Chief of his tribe, the majestic Ivory-bill Woodpecker cleaves his way through the air, in a series of peculiar and singularly graceful undulations . . . 'Disdaining the grovelling haunts of the common herd of Woodpeckers,' he seeks his favorite resorts in the loftiest trees in the most secluded forests; and from the blasted arms of the lordly cypress or the mast-like trunk of the towering pine sends forth his clear and clarion notes, and startles the ear with the resounding strokes of his powerful beak."

Mr. Young (already mentioned) writes from Waverly, Clay Co.,—"In the early settlement of this section the Ivory-bill was very common, but since the country has become settled, the species, naturally wild, has retired to the unfrequented parts of the forest and is rarely seen here now (1890). I saw a beautiful specimen in Monroe County in 1885 on the Tombigbee River, while in the flat woods beyond Houston they are frequently met. I have seen quite a number recently in the Mississippi bottom, which is now a favorite place for them, as the timber, which has been deadened, furnishes them with all the material necessary for a good living, and my observation leads me to the belief that a red oak timbered country is their favorite feeding ground in this region." In January, 1885, Mr. Maurice Thompson secured a specimen at Bay St. Louis, and according to Mr. Rawlings Young, of Corinth, it is still found in the Yazoo Delta, and along the Mississippi River.

Its presence in Louisiana rests on two records:—the first, a specimen at the Smithsonian taken at Prairie Mer Rouge, Moorhouse Parish, in 1853; the second, an account of its being seen at St. Joseph, Tensas Parish, by Mr. Gideon Mabbett, and for which no date is given. This scarcity of records is not surprising when the nature of the country and the class of people inhabiting by far the larger part of it is taken into consideration, and the same may be said of Arkansas, Missouri and Tennessee,—that in swamp country where the main object in life is to raise sufficient during the summer months for sustenance throughout the winter, little scientific element is to be found.

Texas, however, has a somewhat better showing,—the testimony of Mr. G. H. Ragsdale being that in the early settlement of Cooke County it is reported from that locality, but is not found

* Rep. Agric. and Geol. Miss. 1854, 323-324.

there now; and Audubon* mentions it as very abundant along Buffalo Bayou. In 1865, Dresser, in his list of Texas birds,† states that the species was “found on the Brazos River, where the timber is large; and a planter on the Trinity River told me that it is not uncommon there. A friend of mine on the Brazos promised to procure the eggs for me, but wrote to me, in May, 1864, saying that he had been to the nest and found it to contain young ones. He said that these birds are by no means rare on the Upper Brazos.” Mr. Nehrling‡ states that in 1882 it was very rare in the northern parts of Harris and Montgomery Counties, while last but not least is the record of Mr. Goss, in Jasper County in 1885, already mentioned.

Returning to the Mississippi Valley proper and continuing northward into Arkansas we find that Audubon mentions it as occurring along the Arkansas River; while in 1885 it was still found in the northeastern part of the State, being abundant at Newport.§

At Caddo, Indian Territory, it passed the winter of 1883-1884,§ while in Missouri, according to Mr. Lientz, it formerly bred at Fayette,§ although not known to do so at present, and as far west as Kansas City§ it was observed to pass a few winters immediately preceding 1885.

Indiana, Illinois and Kentucky each have one record (although Audubon mentions it as occurring in Indiana and Kentucky, failing, however, to name any locality). In Franklin County, Indiana, it|| was a former resident, but none have been seen for many years. Mr. Ridgway states that he “has a distinct recollection of what he believes to have been this species in White County, some forty miles south of Mt. Carmel,” Illinois,¶ some time between 1858 and 1860; while Pindar** informs us that it is said to have been formerly common in Fulton County, Kentucky, and that Mr. J. A. Taylor saw several about 1883 or 1884.

For Tennessee no records have been found, although it would seem highly probable that the bird occurs in the bottom lands bordering the Mississippi, especially when we consider the record

* Aud. Orn. Biog. V, 525.

† Ibis, 1865, 468.

‡ Bull. N. O. C. VII, 1882, 170.

§ Miss. Valley Migr. 1888, 128.

|| Cox's Geol. Surv. Ind. 1869, 211.

¶ Nat. Hist. Surv. Ill. 1889, 375.

** Auk, VI, 1889, 313.

from Fulton County, Kentucky; just north of and adjoining this State; and also those directly south in Louisiana, and west in Arkansas.

It will be seen from the foregoing, that in many instances the accounts are modified with the statement that the species is extremely rare as compared with past years, or else has disappeared from the localities entirely. Probably this is not altogether owing to the actual decrease in the numbers of the birds, but to its extreme wildness and desire for seclusion;—"Savage liberty is a pre-requisite of its existence, and its home is the depth of the woods remotest from the activities of civilized man." As a result many of those regions which were formerly its haunts have been abandoned for the wilder and more inaccessible parts of the forest. Audubon relates the finding of a nearly completed nest, and, on his being discovered in the vicinity by the owners, of its immediate abandonment. Surely a bird as wild, as wary, as this would not remain in the vicinity where man was constantly to be met! There are thousands of square miles of swamp throughout the Mississippi Valley and Gulf States that never will or can be reclaimed or settled, country that is admirably suited to this bird, and in which, as I have shown, it is much more common today than elsewhere; and here, it is safe to say, it will be found indefinitely; for, into those swampy fastnesses in which it most delights, few care to penetrate, at certain seasons none dare; and as but few are killed, and each pair in existence today will presumably raise its brood the coming spring and together with them repeat the multiplication each successive year,—it is reasonable to assume that the species will be found there many years hence.

To conclude, it would appear that prior to 1860 the Ivory-billed Woodpecker was distributed from Fort Macon, N. C., along the coast as far west as the Brazos River in Texas, and extending towards the interior for an average distance of seventy-five miles; in the Mississippi Valley as far inland as central and western Missouri, southern Illinois, Indiana, and western Kentucky, together with a portion of Indian Territory. From 1860 to 1880, it had retired before the march of civilization from many of its former haunts, forsaking entirely Indiana, Illinois, North Carolina and all but the extreme-eastern portion of Texas; while from 1880 to 1890 (although a characteristic bird of the Austroriparian region) it has practically confined its abode to the denser swamps bordering the South Atlantic and Gulf States.

TABLE SHOWING THE FORMER DISTRIBUTION OF *Campephilus principalis*.

North Carolina		Wilson, Am. Orn.
Wilmington	?	Coues and Yarrow.*
Fort Macon		
South Carolina		
Pine Barrens	1851	Burnett.†
Charleston	About 1850	Lawrence coll., 2 specimens.
Hunting Islands	Prior to 1870	Hoxie, in epist.
Johnson's Island	March, 1879 or 1880	" " "
Georgia		
Okefinokee		Thompson, 'Red-headed Family.'
Swamp		
Florida		
Cedar Keys	Jan. 31, 1859	Smith. Inst. coll.
Enterprise	March 26 & 29, 1861	Ibis, IV, 1862, 127-197.
Volusia	February 12, 1869	Allen, 'Mamm. & Winter Birds of East Florida' (3 spec.).
		Allen, 'Mamm. and Winter Birds of East Florida' (3 spec.)
Enterprise	March 5, 1869	Ibid.
Hawkinsville	March 15, 1869	S. C. Clark, F. & S. XXIV, 367.
Merritt's Island	1870	" " " " "
New Smyrna	1872	" " " " "
Wekiva River	June 7 & Aug 23, 1876	Brewster: collection (2 spec.).
Wekiva River	Sept. 7, 1877	Smith. Inst. coll.
Lake Monroe	1877 & 1878	" " "
Lente's Landing	Winter of 1878-79	Merriam, notes before Linn. Soc., New York 1879.
		Cory, in epist.
Fort Myers		
Alabama		
Dallas	1859	Gosse, 'Letters from Alabama.'
Marengo Co.	1865	W. C. Avery, in epist.
Millwood	1866	" " " " "
Mississippi		
	?	Wailes§
Clay Co.		G. V. Young, in epist.
Louisiana		
PrairieMerRouge	1853	Smith. Inst. coll.
Texas		
Cooke Co.		G. H. Raysdale, in epist.
Buffalo Bayou		Aud, Orn. Biog. V, 525.
Brazos & Trinity Rivers	1865	Dresser, Ibis, 1865, 468.
Arkansas		
Along Arkansas River		Aud, Orn. Biog. I, 1832, 341.
Illinois		
White Co.	1858-1860	Ridgway, Nat. Hist. Surv., Ill., 1889, 375.
Indiana		
Franklin Co.		Coxe's Geol. Surv., Ind., 1869, 211.
Missouri		
Fayette		Cooke, 'Bird Migration in Mississippi Valley,' 1888, 128.

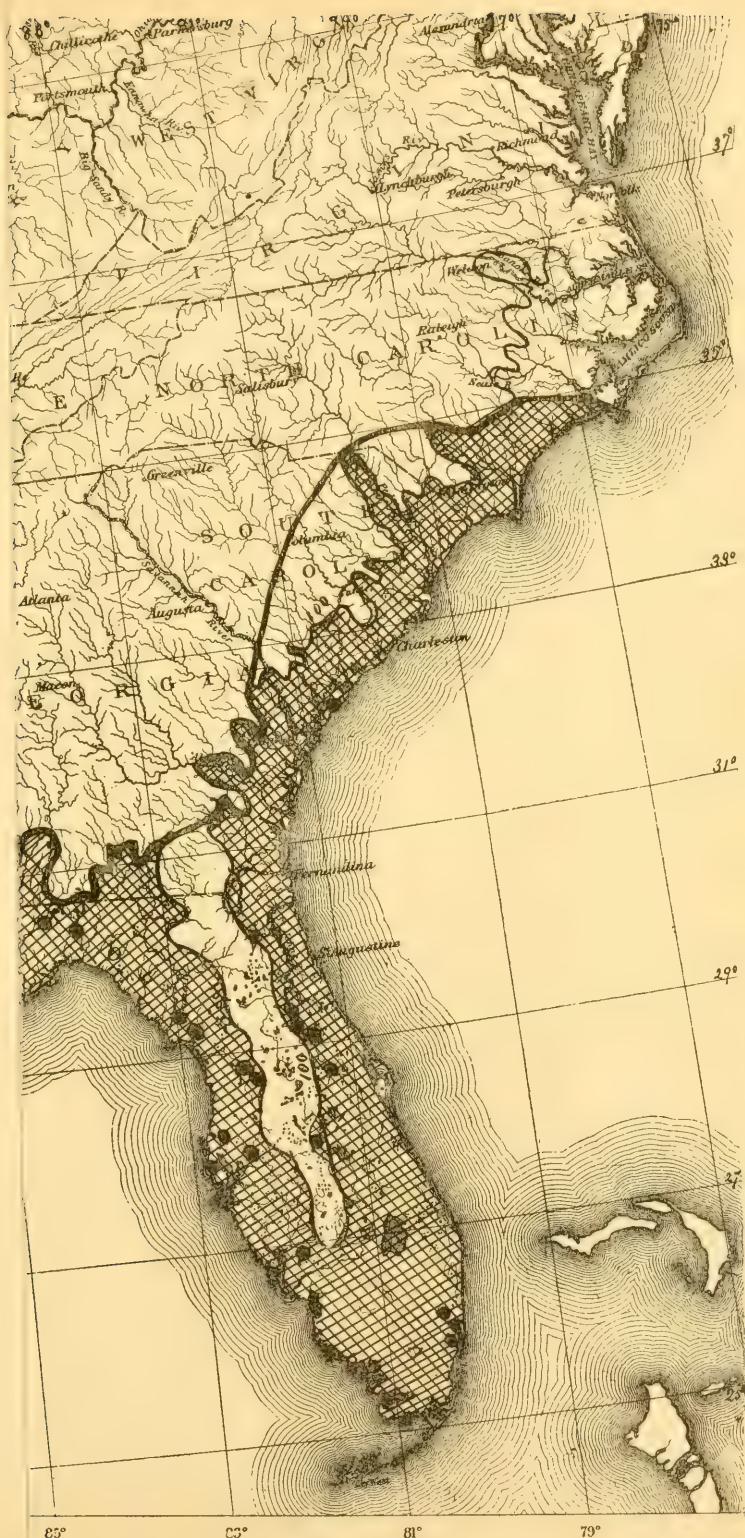
*Coues and Yarrow, Proc. Acad. Nat. Sci., Phila., 1878, 21-28.

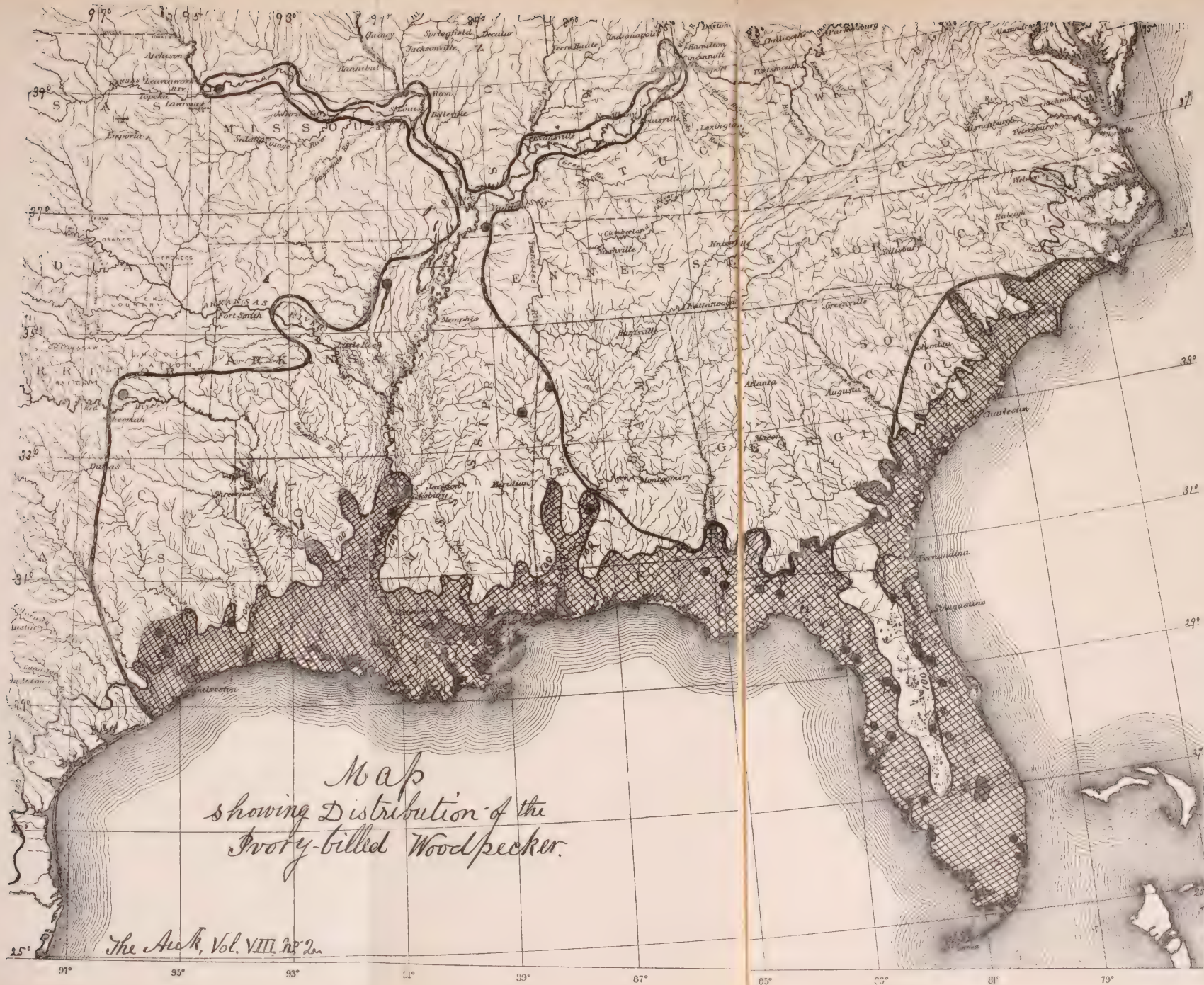
†Burnett, Proc. Bost. Soc. Nat. Hist. IV, 115-118.

§Wailes, Rep. Agri. & Geol. Miss., 1854, 323-324.

TABLE SHOWING THE PRESENT DISTRIBUTION OF *Campephilus principalis*.

South Carolina		
Pritchard's Island	1888	Hoxie, in epist.
Florida		
Rosewood	Nov. 24 & Dec. 3, 1881	Brewster collection (2 spec.).
Panasotkee Lake	1881	Scott, Bull. N. O. C. VI, 14-21.
Withlacoochee River	"	" " " " "
Clearwater	"	" " " " "
Tampa	Sept. 20, 1883	Brewster collection.
Hawkinsville	May 4, 1885	'W. A. D.' F. & S. XXIV, 427.
St. Mark's River	March 8, 1886	Kline, F. & S. XXVI, 163.
Wekiva River	1886	Boardman, " " "
Juniper Creek	March, 1886	E. M. Hasbrouck.
Linden	March 30, 1886	Brewster collection.
De Soto Co.	Feb. 3, 1887	" "
Tarpon Springs	March 17, 1887	Scott, Auk, V, 186.
Dade Co.	May-June, 1889	Brewster collection (3 spec.).
Davenport	June 16, 1889	" "
Cypress	July 1, 1889	" "
Polk Co.	July 5, 1889	" "
Bristol	Dec. 7, 1889	Smith. Inst. coll.
Wacissa River	Winter, 1889-90	Gregg (informant).
Suwanee River	March 24, 1890	Chapman, in epist.
Alabama		
Crump Springs (Buttahatchie River)	1886	G. V. Young, in epist.
Wilcox Co.	1889	" " " "
Mississippi		" " " "
Monroe Co.	1885	" " " "
Bay St. Louis	Jan., 1885	Thompson, 'Red-headed Family.'
Mississippi bottoms	Recently	G. V. Young, in epist.
Yazoo River delta	1890	B. Young, in epist.
Louisiana		
St. Joseph	?	Gideon Mabbett, in epist.
Texas		
Harris Co.	1882	Nehrling, Bull. N. O. C. VII, 170.
Montgomery Co.	1882	" " " "
Jasper Co.	May 3, 1885	B. F. Goss, in epist.
Arkansas		
Newport	1885	Cooke, 'Bird Migration in Mississippi Valley,' 1888, 128.
Indian Territory		
Caddo	Winter 1883-84	Cooke, 'Bird Migration in Mississippi Valley,' 1888, 128.
Missouri		
Kansas City	About 1884	Cooke, 'Bird Migration in Mississippi Valley,' 1888, 128.
Kentucky		
Fulton Co.	About 1883	Pindar, Auk, VI, 313.







NOTES ON SOME SPECIES OF BIRDS OF THE
ISLAND OF CUBA.

BY DR. JOHN GUNDLACH.

Calypte helenæ Gundl.

IN the synonymy given by Mr. Charles B. Cory in his 'Birds of the West Indies' may be added between *Calypte helenæ* Gould, Mon. Troch. III, pl. 136 (1861), and Gray, Handb. Bds. I, p. 145 (1869), the reference: Gundl. Repert. Fisico-Nat. Cuba, I, 1866, p. 291; and between Gundl. J. f. O. 1874, p. 144, and Muls. Hist. Nat. Ois. Mouch., IV, p. 77 (1877), the reference: Gundl. Contrib. a la Orn. Cuba, 1876, p. 109.

The reference *Orthorhynchus boothi* Cab., J. f. O., is *boothi* Gundl. in Cab., J. f. O., 1856, p. 99, where Dr. Cabanis in a note says that the name *boothi* proposed by me for *helenæ* may be omitted because the species named by De Lattre *helenæ* is not of the same genus.

Mr. Cory gives the color of the head, throat, and elongated feathers of the neck as metallic red, almost pink in some lights, but this color changes in some lights also to golden and green.

Mr. Lawrence records, in Ann. N. Y. Lyc. Nat. Hist. 1860, that the male has a well defined terminal band on the tail, nearly equal to one quarter of its length. In the young males and females it exists also inside of the white tip and occupies more space than in the adult male.

The young male has a more bluish green back than the female, and the tail of the old male is emarginate, and that of the young male (or before the perfect plumage) and the female rounded. I have published in J. f. O. IV, 1856, pp. 99-101, a description of this species.

The first specimen, a young male with only four perfect red feathers on the throat, I killed in March, 1844, near Cardenas, searching a flower of *Hibiscus*. Four years afterwards I found a locality on the border of the mangrove, where the flowers of *Avicennia*, *Hibiscus*, etc., supply much nectar. There I have killed many specimens of both sexes in its perfectly colored head and throat and in its ruff of elongated feathers. The first description of this new species I published in Lembeye's Aves de Cuba, 1850, p. 70. The name *helenæ* is given in respect to Doña

Elena de Faz, wife of Don Carlos Booth, my first protector in this island.

The locality mentioned was afterwards destroyed by a railroad, and I found no more of this little bird at Cardenas. Never have I observed the species in other places in the western part of this island, except in a key near Cardenas. In 1857 I visited the city of Santiago de Cuba in the eastern part of this island, and also in the years from 1885 to 1888. There the species is common in the spring. A friend who resides in Puerto-Principe (the middle part of the island) has observed the species there, and like me only during the months of January to end of April. In May it disappears, but I have observed later single specimens in the interior of the island. It seems that they breed there.

The male has a fine song. This species flies before the flowers in a horizontal direction like moths (sphinges), not like *Chlorestes riccordi* with an inclined body and moving his long forked tail.

My observations seem to prove that the males go through two moults in every year. I have noticed that young males with the plumage similar to that of the female have sometimes no red, perfect feathers on the throat. These may be young ones one year of age. Other specimens have perfectly grown red feathers on the head and throat, but not the ruff of elongated feathers. The tail is emarginated and without the white spots. These are perhaps males of two years of age; and others with the entirely perfect plumage are probably very old males. I will continue my observations.

In Vol. VI, p. 46, of 'The Auk' is an article entitled "Remarks upon abnormal coloring of plumage observed in several species of birds," by George N. Lawrence. The principal object of these remarks was a specimen of *Psittacus* with uniform pale blue plumage, described in 1862 (Ann. Lyc. of Nat. Hist., Vol. VII, p. 475) as a new species from Panama under the name of *Psittacus subcæruleus* Lawr., figured afterwards by Dr. Otto Finsch of the Bremen Museum in 1865 from the original specimen. In 1871 (Ibis, p. 94) Mr. Salvin considers the specimen as an accidental variety of the *B. tovi*.

I have noticed with great interest the explanation given by Mr. Lawrence, and I have noticed two similar cases of blue-colored *Chrysotis leucocephalus* Linn. I am convinced that Mr. Lawrence has good reasons for his opinion. In the bleu-colored

Parrots the yellow part of the green color is absent and in albinism the yellow color is absent from the blue part.

Before I arrived in Cuba, in 1839, a blue Parrot was brought from the Island of Pinos (which belongs to the Island of Cuba) to Havana. Many persons have seen this bird. During my residence at the Island of Pinos I tried to obtain information of that species, but without result, and I was of the opinion that the bird was an exotic one, brought first to the Island of Pinos and afterwards to Havana.

In the year 1887 another blue Parrot was captured in the mountains of Guantanamo (the more eastern part of the island of Cuba). The owner was a peasant. When my friend Don Jorge Preval, owner of a coffee estate in his vicinity, received notice of this bird, his intention was to procure the specimen at any price, but a few days before it was sold to a soldier and sent to Santiago de Cuba. I was at that time absent, and after my return I was unable to ascertain whether the Parrot was still at Santiago de Cuba.

Persons who saw this Parrot say that it had the front white and the throat red, like the type of *Chrysotis leucocephala* Linn. I am convinced that both specimens were, like that observed by Mr. Lawrence, only an accidental variety.

Parrots when very old have many red or yellow feathers on different parts of the body, especially when kept in captivity. I have not seen a white Parrot in this island, but have seen an entirely yellow *Chrysotis leucocephalus* with the front white and the throat red.

I have killed also a common Parrot with the front blackish. This is a case of *melanism*. I have this specimen.

A *Xiphidiopicus procussus* Temm., female, killed by me in a key near Cardenas, has a yellow tint on all the green parts. It is the only specimen observed, and may be a variety with a prevailing yellow tint and not a different species.

I have seen or killed many more or less perfect albinos; I give here the list:

Mimocichla rubripes Temm., entirely white.

Geothlypis trichas Linn., ♂, almost yellow, without the black frontal band.

Euthia lepida Linn. (*olivacea* Gmel.), entirely white, and another one with yellow parts.

Sturnella hippocrepis Wagl., entirely white except the yellow throat.

- ✓ *Quiscalus gundlachi* Cass., entirely white.
- ✓ *Myiarchus sagrae* Gundl., with pale gray, not brown, upper parts.
- ✓ *Crotophaga ani* Linn., one specimen uniform pale reddish brown; another specimen with great white spots; another with a great many white feathers intermixed on the throat and neck; another with grayish black on the upper parts.
- ✓ *Saurothera merlini* D'Orb., one specimen entirely white and another with intermixed white and yellowish spots.
- ✓ *Centurus superciliaris* Temm., white, preserving the red parts; another like specimen is figured in La Sagra's *Historia física, política y natural de la Isla de Cuba*.
- ✓ *Cathartes aura* Linn., entirely white, and another specimen with white spots intermixed.
- ✓ *Patagias corensis* Gmel., entirely white, and another specimen of pale gray color.
- ✓ *Zenaidura macroura* (*carolinensis* Linn.) with uniform reddish brown color.
- ✓ *Columbigallina passerina* Linn., also uniform reddish brown.
- ✓ *Starnænas cyanocephala* Linn., with white spots.
- ✓ *Ortyx cubanensis* Gould, entirely white.
- ✓ *Ægialitis semipalmata* Bon., with the head, neck, and breast white, with only some feathers of normal color.
- ✓ *Tringa minutilla* Vieill., with some white on the upper parts.
- ✓ *Nycticorax violaceus* Linn., entirely white.
- ✓ *Spatula clypeata* Linn., ♀, very pale colored.

✓ An *Antrostomus carolinensis* Linn., ♀, had the stomach filled with feathers and little pieces of bones (probably of a Warbler), and one of the tail-feathers was colored like those of the male (the inner web white above).

In none of the American authors do I find a satisfactory description of *Pelecanus fuscus*, respecting the color of the head and neck of the different ages. The color of both sexes of the same age is the same. The young bird has the head and neck simply dark brown with a grayish tint; afterwards the head is white and this color extends down the neck as a bordering of the pouch, and somewhat beyond, and there is a white spot on the region of the furcula; the rest of the neck is dark chestnut; the extreme part of the neck between the shoulders has no white. The neck has a more downy and softer plumage than in the young ones. Afterwards the head becomes yellow, the white color which bordered the pouch extends over the whole fore part of the neck; the posterior part is dark chestnut, and the extreme part between the shoulders is white. The occiput has elongated white feathers. The very old bird has the head yellow, all the

neck white, with a yellowish tint toward the shoulders. This is the permanent plumage of the oldest birds. During the moult occur transitions between the different phases of coloring.

DESCRIPTION OF A SUPPOSED NEW *MYRMECIZA*.

BY GEORGE K. CHERRIE.

THERE are in the collection of the Museo Nacional twenty specimens referable to the genus *Myrmeciza*. Thirteen of these come from the eastern side of the great mountain range, and seven from the Pacific lowlands. The form from the Pacific side I suppose to be new. However, without either works of reference or authentically identified specimens, I can feel no certainty about which form really is *M. immaculata*. I do not even know from what locality the type specimen of *immaculata* came. My supposition that the Pacific form is the new one is based on Mr. Ridgway's note under *Myrmeciza immaculata* in a paper "On a collection of birds from the Hacienda la Palma, Gulf of Nicoya, Costa Rica," by C. C. Nutting. (Proc. U. S. Nat. Mus., Vol. V, 1882, p. 398.) Mr. Ridgway says: "The female from La Palma is referred doubtfully to this species. It differs markedly from three other Costa Rican specimens, from the Atlantic coast, in having the jugulum and breast bright chestnut instead of dull chestnut brown, but I am unable to detect any other differences."

With the small series of specimens I have before me, other slight differences are discernible in coloration, besides a decided difference in size, as will be shown in the following descriptions and tables of measurements.

In case the western form may prove to be new, I would suggest the name *occidentalis*,* and characterize the form as follows:

***Myrmeciza immaculata occidentalis* subsp. nov.**

Male (No. 1352, Museo Nacional, Pozo Azul, January, 1887, José C. Zelédón).—Above: whole head slate-black; back, a rather dark vandyke brown, the wings and tail with a more dusky shading. Below: throat

* I employ the name *occidentalis*, at the suggestion of Mr. José C. Zelédón, as indicative of the locality.

and breast slate-black, changing gradually posteriorly to slate-gray on the abdomen; flanks and under tail-coverts vandyke brown, the latter much the brighter; under wing-coverts brownish slate-gray; bend of wing white. "Bare orbital skin, cobalt-blue; iris, chestnut"; bill black. The feathers of the crown are somewhat elongated, but not in the form of a crest. The wings are short and rounded; the first primary is the shortest; the third is about equal to the eighth; the fourth, fifth and sixth are the longest.

Female (No. 1351, Museo Nacional, Pozo Azul, January, 1887, José C. Zelédón).—Above: head slate-black with a shading of vandyke brown commencing on the crown and deepening posteriorly to the cervix where the blackish color entirely disappears, giving place to the rich vandyke brown of the back; wings, rump and upper tail-coverts a little brighter; tail slightly darker. Below: auriculars slate color; chin and throat slate-gray with a slight shading of chestnut from the jugulum; jugulum bright chestnut, changing into hazel brown on the breast; sides of breast, sides, flanks, and under tail-coverts vandyke brown, darkest on the sides of the breast, and brightest on the under tail-coverts; under wing-coverts grayish vandyke brown. "Bare orbital skin, cobalt blue; iris, chestnut." The label of another female (No. 3308) reads: "Upper mandible black; lower, blackish; feet and legs plumbeous; iris, brown." The remaining five examples show considerable individual variation in color. All are a trifle darker on the back, but present an unbroken series of variations. Below, in Nos. 1350, 3308, and 4592, there is only a trace of hazel on the breast, the vandyke brown of the sides taking its place. In Nos. 635 and 4590 the hazel of the breast is replaced by chestnut from the jugulum.

Specimens from the Atlantic side may be compared with those from the Pacific side, and described, as follows:

Male (No. 3419, Museo Nacional, Jiminez, August 16, 1889, A. Alfaro) similar to the male described as coming from the Pacific side, differing principally in the relative proportions; however, the back seems a trifle darker; also the head a shade blacker; but with only the single specimen from the Pacific side it is impossible to say whether these differences are constant or not.

Female (No. 3415, Museo Nacional, Jiminez, August 8, 1889, A. Alfaro), above, similar to the females from the Pacific side, but with the head and back a trifle darker. Below, chin and throat a blackish slate; rest of underparts dark vandyke brown, as dark as the sides of the breast of the Pacific form. (Perhaps the color of the underparts would be better described as dark sepia brown.)

A young male (No. 3417, Museo Nacional, Jiminez, August 16, 1889, A. Alfaro) resembles most the female. The head, however, is vandyke brown like the back, only the bases of the feathers being blackish. The wings are blackish, being edged only with the color of the back. Tail blackish, indistinctly barred with narrow white bands, showing most from below. Below, chin and throat slate-gray, heavily washed with the color of the breast, which is somewhat lighter than in the adult bird. Under tail-coverts barred with from two to three black bands.

MEASUREMENTS (in inches).

M. immaculata occidentalis

				Wing	Tail	Tail feathers	Exposed culmen	Tarsus	
♂	635	A. Alfaro	Trojas	Feb., 1886	2.58	2.15	1.75	.77	1.10
	1350	J. C. Zelédon	PozoAzul	Jan., 1887	2.68	2.15	1.81	—	1.03
	1351	"	"	"	2.66	2.13	1.84	.73	1.11
	3308	"	"	Sept. 13, 1889	2.62	2.22	1.94	.69	1.05
	4590	C. F. Underwood	Bebedero	Feb. 15, 1890	2.56	2.25	1.95	.77	1.05
	4592	"	"	Feb. 22, 1890	2.59	2.26	1.90	.82	1.06
♀	1352	J. C. Zelédon	PozoAzul	Jan., 1887	2.72	2.26	1.95	.80	1.13
Average of the six females					2.61	2.19	1.86	.76	1.05
Minimum					2.56	2.13	1.75	.69	1.03
Maximum					2.68	2.26	1.95	.82	1.11

M. immaculata.

					Wing	Tail	Tail feathers	Exposed culmen	Nostril to tip of bill	Tarsus
♀	634	A. Alfaro	Jimenez	April, 1886	2.70	2.05	1.83	.75	.47	1.12
♀	3415	"	"	Aug. 8, 1889	2.62	1.96	1.70	.76	.49	1.10
♀	3416	"	"	Aug. 6, 1889	2.50	2.03	1.80	.70	.45	1.10
♀	3659	C. F. Underwood	Carrillo	Aug. 18, 1889	2.45	2.05	1.80	.74	.47	1.06
♀	4762	A. and C.	Jimenez	Dec. 22, 1889	2.64	2.17	1.84	.76	.45	1.02
♀	4763	A. and C.	"	Dec. 23, 1889	2.50	2.07	1.78	.73	.46	1.03
♂	1353	Juan Cooper	Pacuare	1876	2.60	2.15	1.80	.75	.49	1.07
♂	3418	A. Alfaro	Jimenez	Aug. 7, 1889	2.60	2.15	1.90	.65	.43	1.12
♂	3419	"	"	Aug. 16, 1889	2.66	2.08	1.85	.76	.47	1.12
♂	3420	"	"	Aug. 22, 1889	2.58	2.16	1.88	.76	.49	1.13
♂	3421	"	"	Aug. 16, 1889	2.53	2.15	1.86	.71	.46	1.05
♂	3660	C. F. Underwood	Carrillo	Aug. 18, 1889	2.67	2.04	1.76	.77	.48	1.05
Average					2.59	2.09	1.82	.74	.47	1.08
Average of six females					2.56	2.05	1.79	.74	.46	1.07
Average of six males					2.60	2.12	1.84	.73	.47	1.09
Minimum of females					2.45	1.96	1.70	.70	.45	1.02
Maximum of females					2.70	2.17	1.84	.76	.49	1.10

The males of the eastern form are shown by these measurements to be larger than females from corresponding localities, but smaller than females of the western bird. The single male from the Pacific side is larger than any of the males from the Atlantic side.

BIRD WAVES AND THEIR GRAPHIC REPRESENTATION.

BY WITMER STONE.

IN studying the migration of birds I have always recognized the need of some method of representing graphically the great combined movements or waves of the spring and fall and their coincidence with changes in temperature. It is hard to get any idea of this coincidence from consulting a mass of data unless one spends a considerable amount of time in studying it over, but in a graphic representation the whole matter can be seen at a glance.

The lack of exact data is a considerable hindrance to a satisfactory graphic representation, as the majority of the observers of migration have been content with noting the first and second arrivals and the so-called 'arrival of the bulk,' while the subsequent fluctuations in the number of individuals of the species have gone unrecorded. This year I have been fortunate enough to have at my disposal the observations recorded by the members of the Delaware Valley Ornithological Club on the spring migration of 1890 in the vicinity of Philadelphia. These records consisted mainly of the exact numbers of the various species seen from day to day at the several stations of the members of the Club. In some cases, however, after the early arrivals were recorded, such terms as 'common,' 'several,' etc., have been used to show the comparative numbers of the species present. This method is much less satisfactory, and but little easier to the observer, than noting the exact numbers seen or as close an estimate of them as possible. With this material I have been able to construct several charts which show quite satisfactorily the successive waves of the spring migration.

The method can best be understood by reference to the accompanying cuts. Across the top of the chart is a temperature curve showing the variation in the maximum daily temperature at Philadelphia. Beneath are recorded the daily observations on a few species of birds at five stations,—Haddonfield, N. J. (Saml. N. Rhoades); Wynnewood, Pa. (Wm. L. Baily); Tinicum, Pa. (J. Harris Reed); Olney, Pa. (Geo. S. Morris); and German-

town, Pa. (Witmer Stone). The numbers indicate the exact number of birds seen; 'F' denotes flocks; 'A,' abundant; 'C,' common; and 'S,' several. Wherever a record shows that a movement was taking place, either by the arrival of a species not seen on the days preceding or by the marked increase in the number of individuals of a species, the record is surrounded by a heavy line. The idea is, to show how these records are massed on certain days, indicating a bird wave on that day or the night just preceding, and also how these waves always occur at times when there is a marked rise in temperature.

In these small cuts, it is only possible to record the observations on a very few species, and I have been able only to show two or

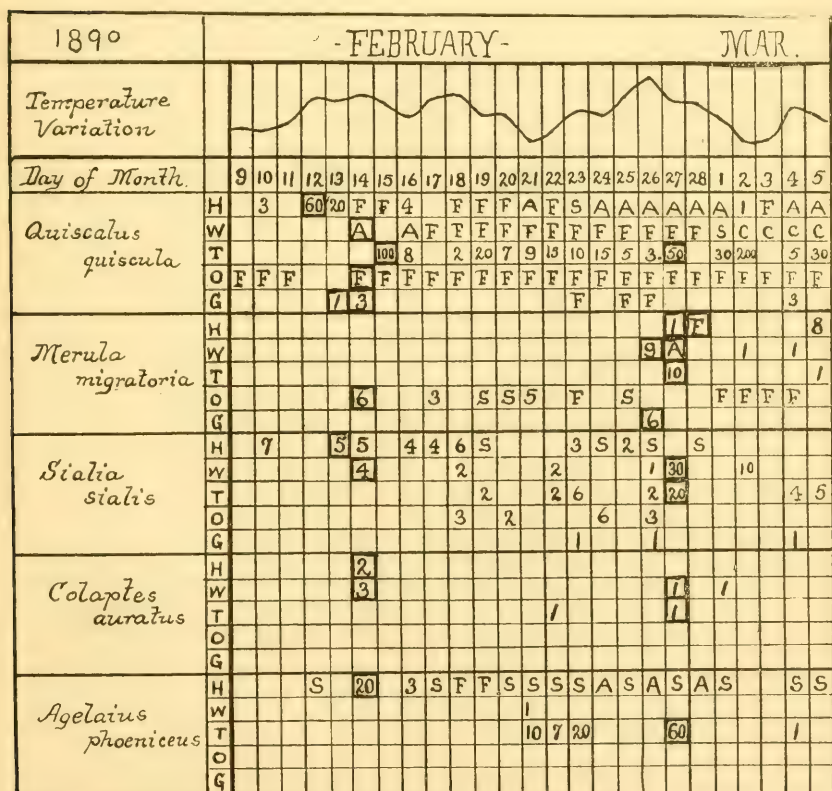


Chart showing the Second and Third Waves of 1890.

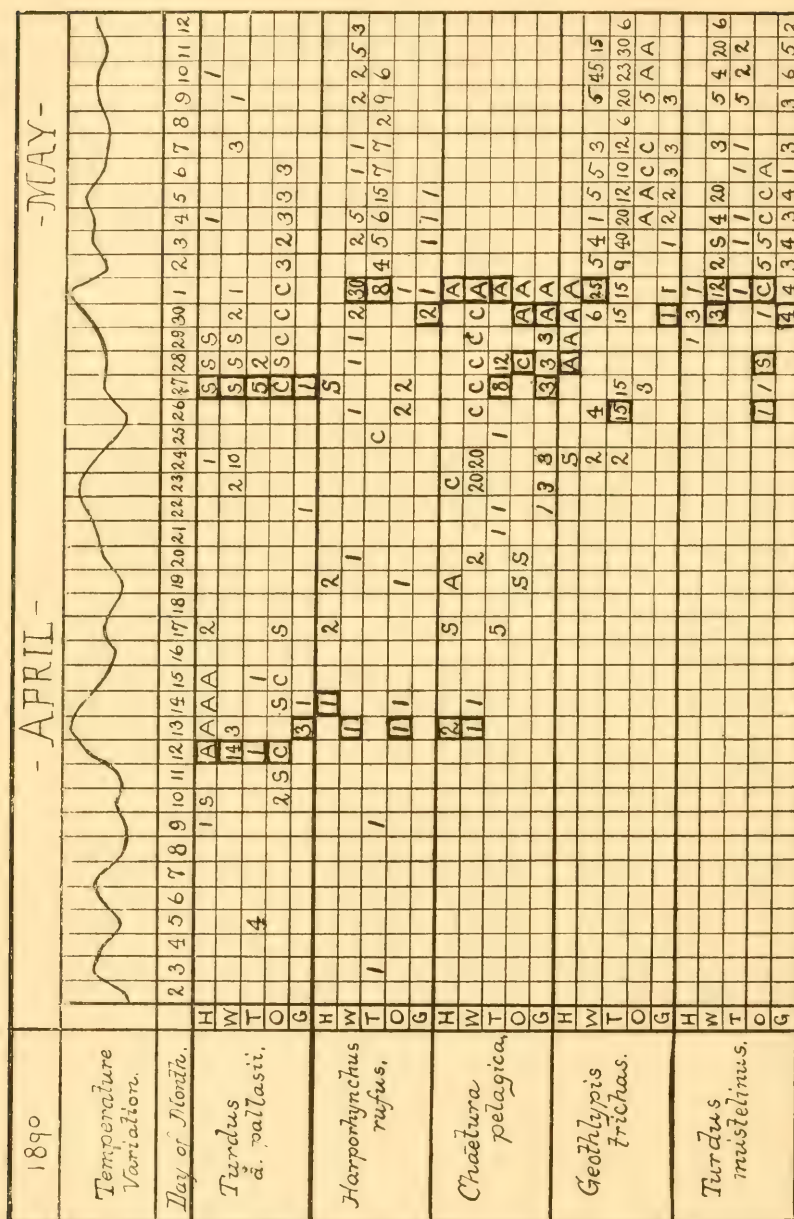


Chart showing the Fifth Sixth and Seventh Waves of 1890

three waves distinctly in each. Therefore such records as indicate migratory movements at other times have not been marked with a heavy border, as it would only tend to make the whole appear confused, the function of these cuts being to illustrate the method rather than the results. A large chart giving the observations on twenty or thirty species shows a number of waves distinctly; each one corresponding to a rise in temperature. The most prominent waves of the spring with a few of their most characteristic species are as follows:

January 12.—Robin and Purple Grackle.

February 12-14.—Purple Grackle, Robin, Bluebird, Red-winged Blackbird, and Flicker.

February 26-27.—The same species.

March 12-13.—The same with the addition of Meadowlark and Cowbird.

April 12-14.—Song Sparrow, Chipping Sparrow, Savanna Sparrow, Hermit Thrush, Golden-crowned Kinglet, and Snow Bird.

April 26-27.—Maryland Yellowthroat, Brown Thrasher, Myrtle Warbler.

April 30—May 1.—Chimney Swift, Barn Swallow, Bank Swallow, Maryland Yellowthroat, Myrtle Warbler, Towhee, Wood Thrush, Baltimore Oriole, and numbers of Warblers.

May 4-5.—Mainly Warblers, also Towhee, Kingbird and Catbird.

May 10-11.—Warblers.

May 18.—Warblers.

As has been already stated two cuts, each based on only five species of birds fail to show all the waves, and do not give much idea of the amount of migration that occurred during the waves which they are intended to illustrate. The following summary, however, will show the amount of migration that took place on the days just given as characterized by the occurrence of bird waves, as compared with the other days of the spring. It must be remembered that we do not expect all the records of migratory movement to fall on the days of bird waves, as birds appear to migrate on every clear night after the spring is pretty well advanced; but we do expect a greater proportion of arrivals and increases in numbers to occur on these days than upon the other days of the spring, and this I think is clearly shown by the following: Taking into consideration the dates of first arrival of fifty of our more common migrants at the five stations already mentioned, between January 12 and May 12, we should have a total of 250 records. Of these twenty-five are lacking in the data before me, the birds having arrived after May 12 or having been missed altogether. These records fall as follows:—

Jan. 12.—First wave.....	3	
Jan. 13-Feb. 11.....		4
Feb. 12-14.—Second wave.....	4	
Feb. 15-25.....		6
Feb. 26-27.—Third wave.....	5	
Feb. 28-March 11.....		0
March 12-13.—Fourth wave.....	6	
March 14-April 11.....		16
April 12-14.—Fifth wave.....	20	
April 15-25.....		12
April 26-27.—Sixth wave.....	16	
April 28-29.....		4
April 30-May 1.—Seventh wave.....	48	
May 2-3.....		8
May 4-5.—Eighth wave.....	28	
May 6-9.....		16
May 10-11.—Ninth wave.....	26	
May 12.....		3
	<hr/>	<hr/>
	156	69

Summing up the result we find that on 19 days during which bird waves were in progress there were 156 first arrivals, or an average of 8.21 per day; while on 102 days when no waves were in progress there were but 69 arrivals, or an average of only .68.

It may be imagined that more careful observations were taken on the days upon which the waves appear to have occurred, but such was not the case, as the observers were aware of this possibility and guarded against it, endeavoring to spend a portion of every day in the field and to cover nearly the same ground daily.*

The increase in the numbers of individuals of each species seen daily, and the dates when the species became common, show a still greater coincidence with the dates which I have just mentioned as those of bird waves, than do the records of first arrivals just given. This is quite natural, so many of the latter are mere stragglers, and it is really surprising that so large a proportion of them as is shown by the summary do coincide with the waves.

In conclusion, I may say that this paper does not pretend to set forth any new theories in regard to bird migration, but simply to offer a few facts in corroboration of the already well-accepted wave theory; and to suggest a method for the graphic representation of the waves of migration and their coincidence with variations of temperature.

* See beyond, 'Work of the Delaware Valley Ornithological Club during 1890, under 'Correspondence,' in this number of 'The Auk.'

ON THE BREEDING HABITS OF *DENDROICA VIGORSII* AT RALEIGH, NORTH CAROLINA.

BY C. S. BRIMLEY.

THE PINE WARBLER—our commonest Warbler—during the breeding season frequents only pine woods and mixed woods containing pines as well as any isolated groups of pine trees; but at other times of the year it is not so exclusive, being often found as far from the neighborhood of pines as is possible in this locality.

This species feeds on insects and their larvæ, but like all our resident species consumes a large amount of vegetable food during the winter, *e. g.*, the seeds of the short-leaved and loblolly pines (*Pinus mitis* and *P. taeda*) as well as the berries of dogwood (*Cornus florida*) and sumac (*Rhus copallina*). During the spring and summer this species feeds mostly in the pine trees; during autumn and winter it also feeds on the ground to a great extent, and may then be found almost anywhere.

The Pine Warbler begins breeding quite early, the dates of finding the first nest (in each case about a day or two old) being March 27, 1888, March 27, 1889, March 3, 1890. The time occupied in building the nest and laying the four eggs is fourteen days, provided the weather is favorable; spells of bad weather such as cold rains or snow, or high and cold winds, usually cause building operations to be suspended for the time being, but this seems to vary with individual birds. In March, 1890, I had six nests under observation when a spell of bad weather came on; three were deserted; one furnished a fresh set in twenty-five days from first finding; one, a single fresh egg seventeen days from finding; and one, a set containing small embryos at the end of nineteen days; the latter nest must have been completed without interruption, although in quite an exposed situation. Nests in an advanced stage of construction do not seem to be often deserted; but when only just commenced, a bad spell of weather usually causes the birds to quit.

The female Pine Warbler gathers material from the trunks and limbs of trees and from the ground, and from both near the nest and as far as several hundred yards. She usually betrays her occupation by her business-like air and methods. She usually flies toward the nest in a straight, business-like flight, but as

a rule alights in the next tree before coming to the nest, or else in a tree beyond, and then hops down to the nest in a desultory sort of way, seldom going at once to the tree the nest is in. The female does most of the building, but on one occasion we observed the male assisting her. As a rule, however, he merely accompanies her in her journeys, keeping a little way off and singing assiduously his own individual song. The song of the Pine Warbler varies within certain limits, the usual song being very different from a nuptial song which is used only in the breeding season and by one fourth or less of the males.

The nest is always placed in a pine, the two species (*Pinus mitis* and *P. taeda*) being used about equally, but the situation varies a good deal. It may be on a horizontal limb, or built among the small twigs toward the end of a limb; in whichever position, it is put there to stay and takes a good deal of pulling to get it away. It may be close to the trunk or as far off as fifteen feet. The height too varies from twelve to eighty feet, the usual height being from thirty to fifty feet. The nest is solid and deep. It is constructed of weed stems, horsehair, and grapevine bark, and is thickly lined with horsehair and feathers. The dark-colored grapevine bark on the outside gives it an appearance characteristic of this species. A good deal of caterpillar silk also is used, as well as small cocoons, in its construction.

The eggs generally are four, sometimes three, and very rarely five. Four is the usual set for the second and third laying as well as for the first, while three seems usually to be the result of bad weather, as we have taken second sets of four from birds that had previously laid three. When one nest is taken, this species immediately builds another nest and lays another set, which I believe from my observations to be an almost universal trait among our small land birds.

The female incubates as a rule, but we have on several occasions found the male on the nest. When the eggs are taken the female usually tries the broken wing dodge. The majority of breeding females are in the dull plumage with little or no yellow below; a few, however, are bright yellow below and not much duller than the males, which renders it difficult in such cases to distinguish the sexes.

To conclude, I may state that the above observations are the result of watching the construction of over fifty nests of this species, thirty of which I found last year.

THE LABRADOR DUCK:—A REVISED LIST OF
THE EXTANT SPECIMENS IN NORTH AMERICA,
WITH SOME HISTORICAL NOTES.

BY WILLIAM DUTCHER.

THE OBJECT of this revised list is to bring before the ornithologists of North America the great desirability of search among the private collections of mounted birds, scattered throughout this country, for specimens of this species of Duck, which in all probability is now nearly, if not altogether extinct. A further object is to record the exact history of the extant specimens so far as it can be gathered at this late day. There are but few naturalists or sportsmen now living who have had any experience with the Labrador Duck in life, and these are one by one passing away. Of the life history of this interesting species but little is known, for when it was common there were but few, if any, observers in the field, and the science of ornithology had not advanced to its present high plane. As long ago as when Audubon was in Labrador (see his 'Birds of America') it was so rare that he did not meet with it and the great Wilson said of it: "This is rather a scarce species on our coast."* Giraud, in his 'Birds of Long Island,' says: "With us it is rather rare."

It is true that at a later date than the above, say during the period from 1840 to 1860, there were apparently more of these Ducks seen than earlier.†

This, however, I think, may be easily explained as follows: during the later period there were a far greater number of scientific collectors, and there was a market demand for game and water-fowl which gave employment to professional gunners who shot and sent to market great numbers of birds. During the open season one can see hanging in our markets hundreds and sometimes thousands of Ducks of the commoner varieties; this has been the case for many years, perhaps to a lesser degree formerly because the demand was not then so great. While it is very

* American Ornithology, Vol. III, 1829, p. 369.

† See the letters and statements given below of such ornithologists as George N. Lawrence, D. G. Elliot, John G. Bell and others who were actively collecting at that date.

probable that the Labrador Duck was more numerous at the time when Wilson and Audubon wrote of it, than during the subsequent period when it *appeared* to be more plenty, yet, I think my explanation of their apparent increase is the true one, and, even at the date when they were seemingly becoming more numerous, they were on the verge of their disappearance, for during the period from 1860 to 1870, when an active lookout was kept for them, none could be obtained.

Through the courtesy of those whose reminiscences are herein recorded I am able to present something of the life history of *Camp-tolaimus labradorius*, and, through much painstaking research on the part of others, a comparatively full history of the known specimens. At this point I wish to express my thanks to all who have so kindly aided me in this compilation.

In case it proves true that the species is extinct, we can only hope that some further specimens may be discovered in out-of-the-way places and securely preserved in public collections. That some have been so secured during the past decade is well known, and it may be the good fortune of some student of ornithology to serve science in a like manner in the future. It seems very likely that so striking a bird as *C. labradorius* would be selected for preservation by sportsmen, and professional and amateur gunners, for ornamental purposes and as trophies of shooting excursions. Scattered along the eastern coast of North America, from the Capes of the Delaware northward, are thousands of preserved specimens of game birds, waders, and waterfowl, and also birds rare and curious to the owners; among these the search must be made. It is the practise of the compiler to examine all such collections that come under his notice and it has been his good fortune to discover, and in some cases to secure, very many interesting specimens as the result of this delving among the possessions of the curious.

The first published list of specimens of the Labrador Duck appeared in 1877, in Rowley's 'Miscellany.* As this list forms the basis of my work it will be given in full hereafter. Mr. Charles B. Cory, in his 'Beautiful and Curious Birds,† revised

*Ornithological Miscellany. Edited by George Dawson Rowley, M. A., F. L. S., F. Z. S. Part VI, London, January, 1877, pp. 205-223, with 6 pl.

†Beautiful and Curious Birds of the World. By Charles B. Cory, F. L. S., F. Z. S., etc., Boston, 1881, Part IV.

the list somewhat, but, as it will now be still further revised and added to, it is not thought necessary or advisable to repeat the Cory list.

No attempt has been made by the compiler to revise the list of specimens in Europe, which will be given exactly as published in the 'Miscellany'. It is thought best, however, in this connection to call the attention of British ornithologists to the statement made by the late Dr. John Latham, that "a pair in possession of Sir Joseph Banks came from Labrador."* In the 'Encyclopædia Britannica' it is stated that the Banks botanical collection went to the British Museum. In Mr. Rowley's list, he specifically states that the specimens in the British Museum were otherwise obtained. It is fair to assume, therefore, that there is, at least, one pair of these valuable birds in Europe that is still unrecorded in the publications of the present day.

"List of Specimens."†

"EUROPE.

	<i>Sex.</i>	<i>Number.</i>
"The British Museum.....	♂, ♀	2
♂ adult, presented to the Museum by the Hudson's Bay Company about the year 1835.		
♀ adult, purchased from Verreaux in 1863, with a miscellaneous lot of North American birds.		
"Liverpool Museum.....	♂, ♀, ♂ juv.	3
♂ adult, purchased from Mr. Gould, January 16th, 1833.		
♀ adult, presented by T. C. Eyton, Esq. (no date); purchased from Mr. Gould January 16th, 1833.		
♂. Though regarded by Lord Derby as a female, this would appear to be a young male; "for the throat and breast are assuming the white of the male."		
"Strickland Collection, Cambridge.....	♂	1
Obtained by Mr. H. E. Strickland, from his relation, Mr. Arthur Strickland, in 1850; in full plumage and good condition. Nothing more is known about it.		
"Col. Wedderburn's collection.....	♂	1
Shot by him in 1852, in Halifax Harbour. Sternum in Cambridge Museum.		
"Leyden Museum.....	♂, ♀	2
Were obtained in 1863. The name put to them is, Prince of Neuwied.		

*A General History of Birds, Vol. X, 1824, p. 318.

† From Rowley's Miscellany, pt. VI, 1877, pp. 221-223.

"Berlin Museum.....?	1
"Paris Muséum d'Histoire Naturelle.....♂	1
Presented in 1810 by M. Hyde; feet somewhat decayed.	

"AMERICA.

"PROFESSOR BAIRD'S LIST.

"American Museum, Central Park, New York....♂, ♂, ♂ juv., ♀	4
♂ adult, from the Wied Collection, 'Labrador.'	
♂ adult from Mr. Elliot's Collection, Long Island, N. Y.	
♂ juv., " " " " " " "	
♀ adult " " " " " " "	
"Collection of Mr. George N. Lawrence.....♂, ♀, ♂ juv.	3
♂ adult, obtained about 1842. Long Island, N. Y.	
♀ " " " " " " "	
♂ juv., obtained about 1865.	

"Brooklyn, Long Island.

"Long Island Historical Society.....♂	1
♂ adult, 1842. Long Island, New York.	
"Collection of Dr. Aiken.....♂	1
♂ juv., obtained within a few years from Long Island, New York.	
"Poughkeepsie, New York; Vassar College.....♂, ♀	2
♂ adult, from Collection of Mr. J. P. Giraud, L. I.	
♀ " " " " " " "	
"Albany, New York: State Collection.....♂	1
♂ adult, Long Island, New York.	
[N. B.—All the above were obtained on the south side (sea-shore) of Long Island, say about 1840-42, except when differently stated.]	
"Collection of Mr. George A. Boardman, Calais, Maine....♂, ♀	2
"Burlington (Vermont University).....♂, ♀	2
♂ and ♀ adult; Long Island.	
"Philadelphia: Academy of Natural Sciences.....♂, ♀	2
"Washington: Smithsonian Institution.....♂, ♂, ♀	3
♂ from Long Island.	
♂ and ♀, from Mr. Audubon's Collection. Locality unknown.	

"Collection of Mr. A. B. Covert.....?	1?
Ann Arbor, Mich.; cf. letter in 'Forest and Stream,'	
May 4th, 1876. Taken at Delhi Mill, Michigan,	
April 17th, 1872."	

Total.....33

Collection of the American Museum of Natural History, New York City.

This collection of Labrador Ducks is by far the finest in the world, not only in point of numbers but in the quality and condition of the specimens. A portion of them have been recently remounted and formed into a group with characteristic surroundings, the whole forming an artistic and realistic object lesson. Three of the specimens in this collection came to the Museum with the collection of Mr. George N. Lawrence, which was acquired in 1887. Three of the others were once the property of Mr. D. G. Elliot, who informs me that he had them all in the flesh. The adult male he secured through John Akhurst, an old and very well known and highly respected taxidermist of Brooklyn; his adult female and young male he procured of the late John G. Bell, a New York City taxidermist of world-wide reputation. The National Museum collection was enriched some years since (1872) by the addition of an adult male from the collection of the American Museum, which was also a part of the Elliot collection. Mr. Elliot states that one of these adult male birds was the last one taken in the vicinity of New York, and, as far as known, the last adult male ever taken.

♂ adult, No. 3739, from the Wied collection, Labrador.

♂ adult, No. 3738, from Mr. Elliot's collection, Long Island, N. Y., about 1862.

♂ juv. No. 3741, from Mr. Elliot's collection, Long Island, N. Y.

♀ adult, No. 3740, from Mr. Elliot's collection, Long Island, N. Y.

♂ adult, No. 45803, from George N. Lawrence's collection, Long Island, N. Y., obtained about 1842.

♀ adult, No. 45801, from George N. Lawrence's collection, Long Island, N. Y., obtained about 1842.

♂ juv., No. 45802, from George N. Lawrence's collection, Long Island, N. Y., obtained about 1865.

Mr. Lawrence informs me that he obtained his two adult birds from J. G. Bell, and the immature bird he purchased in Fulton Market, New York City.

Collection of the Long Island Historical Society, Brooklyn, New York.

♂ adult. "The specimen of the Labrador Duck presented by me to the Long Island Historical Society, was one of two specimens, both male birds, that I killed in November, 1844, at the

mouth of the Ipswich River, south end of Plum Island, Massachusetts Bay. I was paddling in my float or sneak boat, covered with salt hay, when I saw three of these birds, two males and a female, feeding on a shoal spot near a sand-spit. I shot the males, but the female escaped then. I killed her, however, later in the day, on the same spot. A male and female were given to John Bell, then a taxidermist, on Broadway, New York, and John Akhurst mounted the fine male I gave the Historical Society." —NICOLAS PIKE.

Collection of Mr. Gordon Plummer, Boston, Mass.

♂ *juv.* "October, 1890. I sold my Labrador Duck about one month since to Mr. Gordon Plummer, of Boston, Mass." — HENRY F. ATEN, M. D.

"I have in my collection one specimen of the Labrador Duck, young ♂. The only data I have are from Dr. Aten. He procured it of John Bell, who mounted it, some fifteen or twenty years since. Bell had it in his possession some years before Dr. Aten got it. It was found in Fulton Market, New York City, by Bell, who secured two at that time, and Dr. Aten thinks Bell found it among a lot of Old Squaws which came from Long Island, N. Y. My specimen is in excellent condition and acquiring full plumage, I should judge." — GORDON PLUMMER.*

Collection of Vassar College, Poughkeepsie, N. Y.

♂ *adult*, from the collection of J. P. Giraud, Jr. This specimen is a finely mounted, full plumaged, male bird. That it is from Long Island, as stated in the Rowley List, there is absolutely no proof, although it is highly probable, as the greater portion of Mr. Giraud's life-long ornithological work was done on Long Island. The compiler visited the Vassar collection and through the courtesy and with the aid of Prof. William B. Dwight, examined the whole Giraud collection and all the manuscript and lists connected with it, but could find no data concerning the specimen of the Labrador Duck. Professor Dwight subsequently visited Mrs. Giraud, the widow of the donor of the collection, who willingly placed at his disposal all the ornithological papers in her possession that were left at the death of her husband. Unfortunately nothing was found that threw any light on the subject.

*This is the "Dr. Aiken" specimen in the Rowley List.

In the Rowley List the Vassar collection is also credited with the possession of an adult female Labrador Duck. This is unfortunately not a fact. There is no evidence of any kind indicating that there ever was but one Labrador Duck in the Giraud collection.

Correspondence by Prof. Dwight with Mrs. Tenney, the widow of Professor Sanborn Tenney, his predecessor in charge of the Vassar collection, elicited only the statement that "it is out of the question to suppose that Prof. Tenney could ever have exchanged so valuable a bird as the Labrador Duck from the collection." Prof. Dwight concludes with the following note: "I seem, therefore, to have exhausted all known sources of personal or documentary information. So as it stands, our official list, clearly made out, credits the College with only one specimen, the male. The Rowley List credits the College with two specimens. In the absence of corroborative evidence for the Rowley List, and of only the fact that one specimen alone now exists in the collection, the presumption is entirely in favor of a clerical error in the Rowley List, or of an error on the part of the informant. It is certain that Vassar College is not given to 'exchanges,' certainly not of its valuable birds which were given by Giraud to remain as far as possible a *complete* representation. We have had offers of purchase or exchange at high prices, but have uniformly and immediately declined."

Collection of the University of the State of New York, New York State Museum, Albany.

♂ *adult*. "The male Labrador Duck (Pied Duck) listed on page 38 of the Catalogue of the De Rham Collection (4th Ann. Report) is still in our collection, but we have no data concerning it. For information concerning the De Rham collection I refer you to the 3d and 4th Annual Reports of the State Cabinet."

♀ *adult*. "The other specimen of Labrador Duck in our collection is a female, and after a careful search into its history I have come to the conclusion that it was in the State Cabinet when De Kay prepared his report on Birds.* Our Annual Reports record but two Labrador Ducks, viz., the male in the De Rham collection, and one specimen (sex not stated) catalogued in the 1st

*Zoology of New York. Part 2, Birds. By James E. De Kay. Albany, 1844, p. 326.

Ann. Rept., p. 20, 1848. I think this latter specimen must be the female alluded to above, and as it was in the collection in 1848, only five years after the publication of De Kay's Birds, I think he must have referred to this specimen when he quoted the State Collection (Birds, p. 326).”—WILLIAM B. MARSHALL, *Ass't Zoologist*.

Collection of Mr. Charles B. Cory, Boston, Mass.

♂ *adult* and ♀ *adult*. “I have only two in my private collection, an adult ♂ and ♀, in full plumage. They were killed somewhere between 1857 and '60, and were in George A. Boardman's collection, and were sold to me, by him, some ten years since.”—C. B. CORY.

“I sold my Labrador Ducks to Mr. C. B. Cory. They were shot at Grand Manan a good many years ago, when they were not considered very rare or of much importance. I think they were sent to me by Mr. Isaac Newton, in the spring.”—GEORGE A. BOARDMAN.

Collection of the University of Vermont, Burlington, Vermont.

♂ *adult*.—In the Rowley List this collection is credited with two specimens, both from Long Island. Mr. G. H. Perkins, Professor of Natural History in the Vermont University, has furnished the following information regarding the specimens of this species in their collection: “The Museum of the University has not a pair of Labrador Ducks, but only the male, a very fine and well mounted specimen. It came in a collection made by a gentleman in New York, through Prof. S. F. Baird. I have searched all the documents in existence concerning the Labrador Duck and what I find is a Smithsonian Check List headed by a note in Professor Baird's handwriting: ‘A List of Birds in collection of Ed. Dunham, purchased for University of Vermont.’ On this list the species are checked and sex and age noted. The ‘male adult’ is the only note against the Labrador Duck, and I think this was all that was included in the list and the only specimen we ever had. How we were credited with a pair I do not understand. Professor Baird told me once that most of our birds were collected on Long Island, but where this particular species was taken I do not know. In general I understand that all ducks in this collection, not otherwise named, are from Long Island.”

Subsequently the compiler called the attention of Mr. George N. Lawrence to the above statement, with a view of ascertaining the identity of Mr. Dunham, the original owner of the collection. Fortunately Mr. Lawrence was able to furnish the desired information, which is as follows: "The specimen in the Vermont University is undoubtedly that of the Philip Brasher collection, which they have entire. Professor Baird asked me about the collection that was bought from Mr. Dunham and queried whether it was the one originally owned by Mr. Brasher. I enquired of Mr. John Akhurst of Brooklyn, and learned from him that Mr. Brasher did not want it known that he had parted with his collection and for that reason sold it under another name. He assisted in packing it at Mr. Brasher's house and knew it went from there to the Burlington College." Mr. Brasher was a resident of Brooklyn, an intimate friend of Mr. Giraud, who in the introduction to his 'Birds of Long Island' takes occasion to say that he had made use of the valuable cabinet of Mr. Brasher in the preparation of his work. It is therefore safe to assume almost positively that the location designated for this specimen is correct.

Collection of the Academy of Natural Sciences, Philadelphia, Pa.

"I have looked carefully through the collection and find three specimens, all mounted. Nearly all the specimens in the Academy collection are mounted, and were obtained a long while since, and have very few data attached to them. From several years' work among them, however, I can generally tell from the character of the labels, stands, etc., where the specimens were obtained.

♂ *juv.* "A young male, with a white throat, but with very slight indications of white on the breast, was procured by Dr. Thomas B. Wilson, through Verreaux, and was probably included in the collection of the Duc de Rivoli. This bird was presented to the Academy by Dr. Wilson with the rest of his collection. It bears a small label attached to the leg—'Anas—Amer. Sept.'—but no other data except a number on the stand, which does not correspond to any catalogue that we have.

♂ *juv.* "Another young male with more indications of white on the breast than the one just described.

♀. "These last two specimens are probably those referred to in the Rowley List. They are mounted in the same manner, on the same kind of stands, and were, I think, in all probability procured at the same time. From the character of the mounting I should think they were procured somewhere in this neighborhood, *i. e.*, Pennsylvania or New Jersey, most likely by Krider or Cassin, somewhere in the 'fifties,' but unfortunately they bear no data whatever, and I have not been able to find a record of their presentation. My suggestions as to the locality and date of collection are based on comparison with other specimens similarly prepared and which bear data."—WITMER STONE.

Collection of the United States National Museum, under direction of the Smithsonian Institution, Washington, D. C.

"I send you herewith a list of specimens of the Labrador Duck in our collection :

♂ adult—No. 1972, 'North Atlantic'; J. J. Audubon.

♀ adult—No. 2733, 'North Atlantic'; J. J. Audubon.

♂ adult—No. 61,300, 'North Atlantic'; Am. Mus. Nat. Hist., New York City.

♂ juv.—No. 77,126, Long Island, N. Y., Fall 1875. J. G. Bell.

"The first specimen of the Labrador Duck which actually came into the possession of the 'Smithsonian Museum' was obtained in January, 1872, from the American Museum of Natural History, New York City. It is true there were two specimens (male and female), inside the Smithsonian building before January, 1872, but they belonged to Professor Baird's private collection, which he considered his personal property while he lived. They are the pair figured and described by Audubon, and given by him to Professor Baird."—ROBERT RIDGWAY, *Curator, Dep't of Birds*.

It will be of interest in this connection to quote from Audubon:* "The Honorable Daniel Webster, of Boston, sent me a fine pair killed by himself, on the Vineyard Islands, on the coast of Massachusetts, from which I made the drawing for the plate before you."

Collection of Mr. William Brewster, Cambridge, Mass.

♀. "My female Labrador Duck is apparently an adult bird, and is in good plumage and condition. The skin came to me

*The Birds of America, Vol. V, 1842, p. 329.

bearing a label on which is inscribed simply 'Nova Scotia, 1857.' I bought the bird in April, 1878, of Mr. Bernard A. Hoopes, of Philadelphia, Pa., who informed me that he obtained it from William P. Trumbull, who in turn had it from 'a taxidermist in New York City.' This is all I have ever been able to find out about the specimen.—WM. BREWSTER."

♂ *juv.* "I purchased my second Labrador Duck from Dr. Thomas B. Heimstreet of Troy, New York, who bought it, with some other skins, at the sale of a collection made by Mr. George B. Warren of Troy. The skin bore no label whatever and I have been unable to find out anything about its origin, although I wrote to both of Mr. Warren's sons. The bird is evidently a young male, for the black markings of the adult can be traced in portions of the plumage, which, as a whole, is not unlike that of the female."—WM. BREWSTER.

Mr. Austin F. Park, an ornithologist of Troy, New York, who had seen and examined the above specimen, informed me that it "was a well-made skin, apparently of an immature male, and from the similarity of its make-up to that of several duck skins that were in the same collection, and that were labeled as from a taxidermist or dealer in the City of Quebec, Canada, I suspect that perhaps the skin may have been obtained from that place."

Dr. Heimstreet has furnished the following additional information as to how the specimen in question came into his possession, and also of its original owner, Mr. Warren. "The Labrador Duck which I sold to Mr. William Brewster in November, 1887, was from the collection of the late George B. Warren, who was one of the oldest residents and business men of Troy, where he was born, and where he died May 8, 1879, in his eighty-second year. Mr. Warren studied and collected birds as an amateur upwards of forty years, and had occasionally received ornithological visits from Audubon and Baird. At his death he left to his widow a few hundred nicely mounted specimens of birds, and many hundred bird-skins, embracing some of the very rare birds of America. In 1879 the widow presented most of the mounted birds to the Rensselaer Polytechnic Institute of Troy, and disposed of a large portion of the skins to H. N. Camp, of this city, and myself. We divided the same between us, and I did not discover that I had the Labrador Duck in my share of the skins for many months."

Collection of the Boston Society of Natural History, Boston, Mass.

♂ *juv.* "In the above collection, which is under my charge, we have an immature male Labrador Duck. It was donated to the Society years ago by Theodore Lyman. No date or locality; supposed to have been taken on the coast of New England."—CHARLES B. CORY.

"The Boston Society specimen is a young male, very much like my Troy specimen."—WILLIAM BREWSTER.

Collection of Dalhousie College, Halifax, Nova Scotia.

♂ and ♀. "The only specimens I know of in Nova Scotia are a pair (male and female) in the possession of Dalhousie College, in our City. They were originally owned by Rev. Dr. MacCulloch, of Pictou, Nova Scotia. He was somewhat of a naturalist and a friend and contemporary of Audubon, who frequently mentions his name in his work. Dr. MacCulloch made a collection of birds and willed them to Dalhousie College; they were in very bad order, and the only specimens of any value were the pair of Labrador Ducks which have been remounted."—THOMAS I. EGAN.

The following excerpts from a paper read before the Nova Scotian Institute of Natural Science, May 10, 1886, by Mr. Andrew Downs, refers to the specimens in the Dalhousie College Collection:* "Dalhousie College Museum contains a very rare pair of birds which have now become extinct, the Pied, or Labrador Duck. Attached to them is this label—'Family, Anatina, Brisson; genus, Fuligula; Fuligula Labrador, Lath. Pied Duck. Male and Female. Very Rare.' I think the Dalhousie Museum very fortunate in possessing a male and female of this rare duck. I have been a close observer of the birds of this Province for 63 years, and I have never seen this bird in the flesh, other than a specimen given me by William Winton of Halifax, who obtained the specimen, a male, in the market."

Mr. Harry Piers, of Willow Park, Halifax, under date of November 1, 1890, informs me: "I was talking with Mr. Downs, the other day, and his views are still the same as expressed in his

* Transactions of the Nova Scotian Institute of Natural Science, Vol. VI, pp. 326-327.

article. He knows of no other specimens in public or private collections in Nova Scotia."

REVISED LIST OF SPECIMENS IN NORTH AMERICA.

Collection of the American Museum of Natural History, N. Y.		Adult ♂	3
		" ♀	2
		Juv. ♂	2
Collection of the Long Island Historical Society, Brooklyn, N. Y.		Adult ♂	1
Collection of Vassar College, Poughkeepsie, N. Y.		" ♂	1
Collection of the University of the State of New York, Albany, N. Y.		" ♂	1
		" ♀	1
<i>Total in New York State</i>			11
Collection of William Brewster, Cambridge, Mass.		" ♀	1
		Juv. ♂	1
Collection of Charles B. Cory, Boston, Mass.		Adult ♂	1
		" ♀	1
Collection of Gordon Plummer, Boston, Mass.		Juv. ♂	1
Collection of Boston Society of Natural History, Boston, Mass.		" ♂	1
<i>Total in Massachusetts</i>			6
Collection of United States National Museum, Washington, D. C.		Adult ♂	2
		" ♀	1
		Juv. ♂	1
<i>Total in Washington</i>			4
Collection of the Academy of Natural Sciences, Philadelphia, Pa.		♀	1
		Juv. ♂	2
<i>Total in Pennsylvania</i>			3

Collection of the University of Vermont, Burlington, Vt.	Adult ♂	1
<hr/>		
Collection of Dalhousie College, Halifax, N. S.	“ ♂	1
	“ ♀	1
<hr/>		
<i>Total in Canada</i>		2
<hr/>		
<i>Total known in North America</i>		27
<i>Total known in Europe</i>		11
<hr/>		
<i>Total known</i>		38

The Covert specimen, mentioned in the Rowley List, is not included in the above Revised List, as there are very good reasons for doubting its validity.

SPECIMENS RECORDED AND SINCE LOST.

“William Winton, of Halifax, obtained a male in the market. He gave his specimen to me; I gave it to George A. Boardman.”
—ANDREW DOWNS.*

“I obtained an old skin from Mr. Downs of Halifax but it was so eaten by mice and moths that it was destroyed.”—GEORGE A. BOARDMAN.

“I received a ♀ from Mr. Cheney, that had been shot in April, 1871.—HAROLD HERRICK.†

“The last one I know to have been taken was shot by S. F. Cheney, at Grand Manan, in April, 1871. It was given to Harold Herrick, who subsequently gave me the skin. I sent it to John Wallace, of New York to be mounted for Prof. S. F. Baird of the Smithsonian Institution. Not knowing its value, Wallace let some one get the skin from him and it was thus lost to the Smithsonian, as he could not tell who had it.”—GEORGE A. BOARDMAN.

“The female Labrador Duck I gave to Mr. Herrick was with some Old Squaws or Long-tailed Ducks when I shot it, and I think there were no others of the kind with it. This one had

*Trans. of the Nova Scotian Inst. of Nat. Sci., Vol. VI, p. 327.

†A Partial Catalogue of the Birds of Grand Manan, New Brunswick. Bull. Essex Inst., Vol. V, Nos. 2 and 3, 1873.

small shells in its crop. It dove to the bottom with the Squaws."—S. F. CHENEY, *Grand Manan, N. B.*, October 30, 1890.

"There was a nice pair in Barnum's old Museum, in New York City, that were destroyed by fire. I used to see them after they became rare and tried to get them for the Smithsonian Institution, but did not succeed."—GEORGE A. BOARDMAN.

The specimen recorded by Dr. W. H. Gregg, of Elmira, New York* has unfortunately been lost. Dr. Gregg informs me that the duck in question was shot by a lad December 12, 1878. It was found in a broad expanse of lowlands called the Buttonwoods. These had been overflowed by the Chemung River, during a freshet. The duck had been eaten before he heard of its capture: never saw or was able to procure anything but the head and a portion of the neck. These were preserved for some years. Recently while moving his collection to New York City he entrusted the packing of his specimens to another person, and as the head cannot now be found he suspects that it was thrown away with some moth infested birds as of no interest or value.

HISTORICAL NOTES.

"I recollect that about forty or more years ago it was not unusual to see them in Fulton Market, and without doubt killed on Long Island; at one time I remember seeing six fine males, which hung in the market until spoiled for the want of a purchaser; they were not considered desirable for the table, and collectors had a sufficient number, at that time a pair being considered enough to represent a species in a collection. No one anticipated that they might become extinct, and if they have, the cause thereof is a problem most desirable to solve, as it was surely not through man's agency, as in the case of the Great Auk."—GEORGE N. LAWRENCE, *New York City*, January 4, 1891.

"I believe this Duck is now extinct. My business is dealing in game, and I see many of the fishing people from Newfoundland: I believe if any odd birds were seen that I would hear about them. The name 'Pied Duck' is now applied to the Surf Scoter by many of the gunners from Labrador and Newfoundland."—THOMAS I. EGAN, *Halifax, N. S.*, Nov. 17, 1890.

"I have in my life shot a number of these beautiful birds,

*American Naturalist, Vol. XIII, p. 128, February, 1879.

though I have never met more than two or three at a time, and mostly single birds. The whole number I ever shot would not exceed a dozen, for they were never plentiful: I rarely met with them. The males in full plumage were exceedingly rare; I think I never met with more than three or four of these; the rest were young males and females. They were shy and hard to approach, taking flight from the water at the least alarm, flying very rapidly. Their familiar haunts were the sandbars where the water was shoal enough for them to pursue their favorite food, small shellfish. I have only once met with this duck south of Massachusetts Bay. In 1858, one solitary male came to my battery in Great South Bay, Long Island, near Quogue, and settled among my stools. I had a fair chance to hit him, but in my excitement to procure it, I missed it. This bird seems to have disappeared, for an old comrade, who has hunted in the same bay over 60 years, tells me he has not met with one for a long time. I am under the impression the males do not get their full plumage in the second year. I would here remark, this duck has never been esteemed for the table, from its strong, unsavory flesh."—NICOLAS PIKE, *Brooklyn, New York*, January 4, 1891.

"I began to collect birds about fifty years ago and wanted to get a pair of each species; I did not care for more. The Labrador Duck I procured without much trouble, and if I had any duplicates sent to me I did not save them any more than I should have saved duplicates of Scoters, or Old Squaws. I have no doubt but that I may have had others. I had shooters all about the coast of Grand Manan and Bay of Fundy sending me anything new or odd. Anything they sent to me that I already had mounted generally went into the manure heap. About twenty years since Messrs. John G. Bell and D. G. Elliot of New York wrote to me to try and get them some Labrador Ducks. I wrote to all my collectors, but the ducks had all gone. It seems very strange that such a bird should become extinct, as it was a good flier."—GEORGE A. BOARDMAN, *Calais, Maine*, October 16-29, 1890.

DESCRIPTION OF A NEW SPECIES OF *MIMOCICHLA*, FROM THE ISLAND OF DOMINICA, WEST INDIES.

BY J. A. ALLEN.

Through the kindness of Professor A. E. Verrill, of Yale College, New Haven, I have had recently an opportunity to examine a very complete collection of the land birds of the Island of Dominica, West Indies, made by Professor Verrill's sons, Messrs. Alpheus H. and George E. Verrill, who collected in Dominica for several months during 1890.

Among the rarities of the collection are two specimens of a *Mimocichla*, new to science, and forming the first specimens of the genus known from the Lesser Antilles.

Mimocichla verrillorum, sp. nov.

Thrush? LAWRENCE, Proc. U. S. Nat. Mus. I, 1878, p. 53.

Similar to *M. ardosciacea* of San Domingo and Porto Rico, but much smaller, with much more white on the tail, and with the abdomen strong buff instead of plumbeous fading into white.

Adult male. (Collector's No. 102, Lasswa, Dominica, April 11, 1890; G. E. and A. H. Verrill.)—Above general color nearly uniform dark slate-gray, the feathers of the head with slightly darker centres; lores black; wings black, the coverts and all of the quills broadly edged with slate-gray, lighter than the color of the back, especially on the greater coverts and primaries; tail black, the basal half of the middle feathers externally edged with gray, and all broadly tipped with white except the middle pair, which shows only a faint trace of white at the extreme tip; the outer feather on each side has the inner vane white for more than half its length, the amount of white regularly diminishing on the inner pairs to the fifth, on which it forms a central triangular patch at the end about half an inch in length. Chin, cheeks and throat white, broadly streaked with black; breast and flanks slate gray, much lighter than the back; abdomen white, strongly washed with buff; crissum pure white. Bill and feet bright yellow.

Length (from skin) about 10.50 in.; wing, 4.60; tail, 4.50; culmen, .85; tarsus, 1.50.

Adult female. (Collector's No. 103, Lasswa, Dominica, April 11, 1890.)—Slightly smaller than the male, with the breast paler, and the abdomen more deeply tinted with yellowish buff.

This species finds its nearest relative in *Mimocichla ardosciacea* of Porto Rico and Santo Domingo, holding somewhat the same relation to it, as regards the color of the ventral surface that *M. rubripes* holds to *M. plumbea*. The wing and tail are each fully three-fourths of an inch shorter in *M. verrillorum* than in *M. ardosciacea*: the culmen is also shorter; but the tarsi are slightly longer and the wing appreciably more rounded. The white in the tail is much purer, and twice greater in extent, tipping the outer five pairs of feathers instead of being confined to the outer four, as in the other species of the genus, and occupying considerably more than the apical half of the outer feather.

This is evidently the bird mentioned by Mr. Ober as "described [to him] by several persons, something like a Thrush, but with yellow bill and legs," and enumerated by Mr. Lawrence* as "5. 'Thrush'?" According to the Messrs. Verrill, the bird is well known to the natives of the island, who call it *Perro vanter*; they, however, esteem it very rare and extremely difficult to get.

SOME BIRD SKELETONS FROM GUADALUPE ISLAND.†

BY FREDERIC A. LUCAS.

By the kindness of Dr. C. Hart Merriam I some time ago came into the possession of several bird skeletons collected at Guadalupe Island, off the coast of Lower California, by Mr. Walter E. Bryant. Guadalupe Island is of peculiar interest from the fact that it seems to have been separated from the mainland only long enough for its fauna to have taken the first steps toward differentiation, the number of peculiar species being very small, and the number even of sub-species limited. In this respect Guadalupe differs vastly from the Galapagos Islands, where specific differentiation has proceeded so far that each island has its own char-

* Catalogue of the Birds of Dominica from Collections made for the Smithsonian Institution by Frederic A. Ober, together with his Notes and Observations. By George N. Lawrence. Proc. U. S. Nat. Mus., I, 1878, pp. 48-69.

†Read at the Washington meeting of the A. O. U., Nov., 1890.

acteristic species, while many of them are separated by a wide gap from their nearest relatives of the mainland, and we may say that in the Galapagos we see differentiation in its completion, and in Guadalupe in its inception.

The value of these skeletons lies in the fact that they give us some hints as to the comparative rapidity with which external and internal changes may take place, and it is much to be regretted that we possess no good series of skeletons of species common to the island and the continent.

As the climatic conditions existing at Guadalupe are not very different from those prevailing on the mainland, color differences between subspecies, or even closely allied species, would be largely the result of any innate tendency to variation, while structural differences would be due either to the same cause, or to change of habit produced by restricting the range of individuals to a limited area. Now while a considerable amount of individual variation will be found to exist in any extensive series of specimens of a given species, such differences, aside from those of mere size, are, as a rule, either reversionary in character or due to physiological adaptation, the existing groups of birds, and especially the Passeres, seeming to have become so fixed in their respective types that new morphological departures are extremely rare. It would, therefore, have been very strange had any such departure been found to exist in the five species represented, and it is very evident that the skeletal peculiarities presented by the skeletons under consideration are the result of change of habit due to insulation.

In order to express the relative proportions of the limbs and sternum and show the amount of their variation in the birds considered, the length of the vertebral column, exclusive of the caudals, was called one hundred, and the various parts compared with this standard.

The skeletal differences between *Polyborus tharus* and *P. lutosus*, the first on the list, are extremely slight, so slight indeed, that judged by them alone there are no grounds for considering the two birds as belonging to two species. That there are no perceptible distinctions between the skeletons of the two species, is not, however, surprising, for *Polyborus tharus* being non-migratory, the habits of the two birds must be very much alike and there would be no physiological reason for any change,

while change from any inherent tendency of a species to vary seems to come about very slowly and require a vast stretch of time for its accomplishment.

Comparison of *Pipilo consobrinus* with *Pipilo maculatus megalonyx* and *P. erythrophthalmus* shows a considerable falling off of the island bird in the length of the sternum, for while the legs and wings of all three species are practically alike the sternum of *consobrinus* is but little more than two thirds as long as that of *erythrophthalmus*. *Pipilo erythrophthalmus* is much the strongest of the three species in its wing, for although the wing itself is but a trifle longer than in the others the sternum is not only longer, but deeper than in either *consobrinus* or *megalonyx*, indicating well developed pectoral muscles. As all the Chewinks spend much of their time upon the ground, similarity of habit in this respect would naturally account for similarity in the size of the leg. The migrations of *Pipilo maculatus megalonyx*, are short, this southwestern species inhabiting the mountains in summer and descending to the valleys for the winter. The migrations of *Pipilo erythrophthalmus* on the other hand are extensive, and its greater sternal development is simply a result of the greater length of its travels, while the restriction of *Pipilo consobrinus* to one locality, coupled with its ground-loving habits, has brought about the diminution of its flying apparatus.

Junco insularis, when compared with *J. hyemalis*, not only shows great sternal reduction, but reduction in the length of the wing, although the humeri of the two species are much alike.

The case of these birds parallels that of the Pipilos, *Junco hyemalis* being a bird of extensive range and consequently good powers of flight, while *insularis* is of restricted range and equally restricted flight.

Carpodacus amplus is well named, for it is a stout, well-rounded bird, slightly larger than *Carpodacus cassini*, and almost twice the bulk of its nearer relative *Carpodacus frontalis*.

Comparison shows that *C. amplus* is ahead of both these in length of leg, and that it leads *C. frontalis* in length of wing, although showing some falling off in the length of the sternum.

All in all the island bird seems to have undergone but little change from its restricted habitat, and if it has lost in wing power, this has been compensated for by increase in the length of leg and size of skull, this exceeding that of *C. cassini*.

There seems to be an increase in the size of the skull indicated by these specimens, for in this particular *Junco insularis* exceeds *J. hyemalis* and *Polyborus lutosus*, *P. tharus*.

The last bird to be considered is *Salpinctes guadalupensis*, and this species is remarkable from the fact that it has gained and not lost in power of flight, for its wing decidedly exceeds that of *S. obsoletus*, while the sternum of the island bird is a little more than one half longer than that of the continental form. Why this little Guadalupe Wren should have developed such powerful wings, comparatively speaking, is not perhaps quite clear, but it may be possible that in these Guadalupe birds we have a case paralleling that of the insects of the Azores, which either fly well, or do not fly at all, the inference being that all insects of but moderate powers of flight have been swept out to sea and lost. Be that as it may, *Salpinctes*, and to some extent *Carpodacus amplus*, indicates that insulation is not of necessity degeneration so far as the power of flight is concerned.

There are two interesting facts that Mr. Bryant has recorded in regard to *Salpinctes guadalupensis*, the first being that measurements show a slight increase in the length of bill during an interval of ten years, while in the same space of time the species had become the most abundant on the island, *Junco insularis* having previously taken the lead in that respect.

Now there may be no correlation between the power of flight and increase in numbers, but is it not probable that superior wing power would give superior ability to obtain food, to elude the pursuit of enemies and to escape being blown out to sea while superiority in these points would not unnaturally lead to an increase in the number of individuals?

There are certain facts well illustrated by the proportionate measurements for these birds, and although these facts are doubtless well known I do not remember to have seen them formally stated. They are as follows:

The first symptom of weakening flight appears in a decrease in the length of the sternum, diminution in the depth of the keel not taking place until later on.

This is followed by reduction in the length of the wing, beginning with the manus and fore arm, the humerus apparently not being affected until the rest of the wing is perceptibly lessened. Then the outer wing bones disappear, leaving only the humerus

—as in *Hesperornis*,—and finally the humerus itself may be wanting, as in *Dinornis giganteus*, and we have the extreme of degeneration in an absolutely wingless bird.

MEASUREMENTS.

	Leg.	Wing.	Humerus.	Sternum, Length.	Depth.
Pipilo consobrinus	122	90—	30—	23+	9
“ maculatus	120	90	30	30	9
“ erythrophthalmus	122	91	30	33	11
Junco insularis	112	88	29	22	8
“ hyemalis	113	97	30	30	10
Carpodacus amplus	100	99	29—	34	12
“ cassini	99	101	29	36	12
“ frontalis	94	96	28	36	12
Salpinctes guadalupensis	120	99	30—	35+	6.5
“ obsoletus	121	85	28	22	6

RECENT LITERATURE.

The Ornithology of ‘The Century Dictionary.’*—‘The Century Dictionary’ is beyond doubt *the* literary monument of the age. It is the result of seven years of arduous and unremitted work on the part of some forty experts, consisting of eminent specialists in every department of human knowledge. “The plan of ‘The Century Dictionary’ includes three things: the construction of a general dictionary of the English language which shall be serviceable for every literary and practical use; a more complete collection of the technical terms of the various sciences, arts, trades, and professions than has yet been attempted; and the addition to the definitions proper of such related encyclopedic matter, with pictorial illustrations, as shall constitute a convenient book of general reference.” The result is a collection of about 225,000 words with their definitions and etymologies. Technical terms are a conspicuous feature, many thousands having been gathered which have never before appeared in any general dictionary, or even in special glossaries. These include not only names of organs, structures, functions, and processes, but a large proportion of

* The | Century Dictionary | An Encyclopedic Lexicon | of the English Language | Prepared under the Superintendence of | William Dwight Whitney, Ph. D., L. L. D. | Professor of Comparative Philology and Sanskrit | in Yale University | In Six Volumes. | Volume I [IV] | [Vignette] Published by | The Century Company. | New York. [1889-90.]

the systematic names of biology. "To the biological sciences a degree of prominence has been given corresponding to the remarkable recent increase in their vocabulary. During the last quarter of a century there has been an extensive reorganization and variation of the former systems of classification, from which have come thousands of new names of genera, families, etc.: and also a profound modification of biological conceptions, which has led both to new definitions of old words and to the coinage of many new words. All these terms that are English in form, and for any reason worthy of record, have been included, and also as many of the New Latin names of classificatory groups as are essential to a serviceable presentation of zoölogy and botany. The selection of the New Latin names in zoölogy has been liberal as regards the higher groups, or families, orders, etc., whether now current or merely forming a part of the history of the science; but of generic names only a relatively small number have been entered. Probably about 100,000 names of zoölogical genera exist, 60,000 at least having a definite scientific standing; but the whole of them cannot, of course, be admitted into any dictionary. The general rule adopted for the inclusion of such names is to admit those on which are founded the names of higher groups, especially of families, or which are important for some other special reason, or popular use, an established position in works of reference, the existence of species which have popular English names, etc."

The foregoing extracts from the preface indicate the scope and character of treatment of the ornithological names and subjects, in common with those of biology in general. The biological collaborators selected at once inspire confidence in the work, a critical inspection of which cannot fail to excite admiration.

We further learn from the preface that "The definitions of that part of general biological science which in any way relates to animal life or structure, including systematic zoölogy, have been written by Dr. Elliott Coues, who has been assisted in ichthyology and conchology by Prof. Theodore N. Gill, in entomology by Mr. Leland O. Howard and Mr. Herbert L. Smith, and in human anatomy by Prof. James K. Thatcher. Special aid has also been received from other naturalists, particularly from Prof. Charles V. Riley, who has furnished a number of definitions accompanying a valuable series of entomological cuts obtained from him." The botanical collaborators are Dr. Sereno Watson and Mr. Arthur B. Seymour (from A through G), and Dr. Lester F. Ward and Prof. Frank H. Knowlton (from G to Z). The pictorial illustrations are generally of a high grade, and are very largely made especially for the work.*

Four volumes of 'The Century Dictionary' have already appeared, the first three bearing date 1889, and the fourth 1890. The remaining two are announced to appear shortly. They are large quarto in size (type bed $7\frac{3}{4} \times 10\frac{1}{2}$ inches), and average over 1200 pages each. The ornithological

* Many of the illustrations of birds and mammals have been drawn by Mr. Ernest E. Thompson, from specimens furnished by the American Museum of Natural History.

matter, both as regards text and cuts, forms a conspicuous feature of the work, which is thus practically an encyclopedia of ornithology. For those who know Dr. Coues's ability at giving the gist of a bird's history in a few happily worded sentences, it is unnecessary to say that a vast amount of information is compressed into the space of a few lines. To cite a few illustrations: About 700 words are devoted to the word Grouse and two cuts, one representing the Scotch Ptarmigan, the other the Dusky Grouse of western North America. The history and etymology of the word occupies about 100 words, followed by a definition of the characters of the sub-family Tetraoninae, with an enumeration of most of the species, under both their English and Latin names, with the principal synonyms of the former. In addition to this about 100 words are given to *Bonasa*, with a cut of our Ruffed Grouse; about the same to *Canace*, with a cut of the Canada Grouse; about 150 words are given to *Centrocercus*, with a cut of the Sage-Cook; under *Dendragapus*, this term is defined and a cross reference made to *Canace*; Ptarmigan receives about 200 words, with a cut of the Rock Ptarmigan, while nearly as much more is given under *Lagopus* with a cross reference to Ptarmigan; and so on for the other generic groups of the Tetraoninae. This in fact may be taken as a fair illustration of the scope and method of treatment of ornithological subjects, most of the higher groups, including all of the more prominent genera, receiving from 50 to 200 words each, with generally a cut illustrative of some typical species of the group.

The amount of toil and tact involved in such an undertaking, it is easy to see, is almost beyond estimate, while the utility of such work cannot readily be over-appreciated. That in all parts it is equally good, or wholly beyond criticism, is not to be expected, but a careful examination of the work leaves us with the impression that an endless amount of labor and care has been expended, greatly to the advantage of not only the layman but to the trained specialist, particularly in fields outside of his own province. As a work of reference 'The Century Dictionary' must for a long time easily lead all competitors, it standing quite alone as regards scope, completeness, and fullness of treatment. — J. A. A.

Chapman on a Collection of Birds from British Columbia.* — The collection, of about a thousand specimens, on which this important paper is based, was made by Mr. Clark P. Streater between April 21 and Nov. 15, 1889, at several places in British Columbia and Washington. From June 16 to Sept. 3 he was in the comparatively dry country east of the Coast Range; the rest of the time he spent on or near the coast.

The paper opens with a brief description of the localities visited by Mr. Streater, together with a statement of the dates of his stay at each place, and then passes on to a discussion of the climatic regions in which they

* On a Collection of Birds made by Mr. Clark P. Streater in British Columbia, with Field Notes by the Collector. By Frank M. Chapman. — Bulletin of the American Museum of Natural History, New York City, Vol. III, No. 1, Article VII. Author's edition issued Oct. 8, 1890.

lie, and of the effects of these climates upon the differentiation and distribution of the birds now found there. Mr. Chapman defines the moist coast region as having its eastern boundary "clearly determined by the mountains of the Coast and Cascade Ranges," and as extending northwestward to Kodiak Island, Alaska, and goes on to say: "In the present condition of our knowledge the southern limits of this region can be determined with but slight approximation. The abrupt lines which restrict the climatal conditions of the northern, eastern, and western boundaries are wanting on the southern boundary, and we have here a more gradual transition from the coast area of heavy rainfall southward into Southern California. . . . On the Californian coast the southern limit of the northwest coast fauna may probably be drawn in the vicinity of Cape Mendocino, in Humboldt County, at about latitude $40^{\circ} 30'$, or near the annual isohyetal line of 38 in." In attempting to mark out a definite southern boundary of the 'Northwest Coast Region,' Mr. Chapman has run against the stumbling-block which lies in the path of everyone who tries to draw hard and fast lines that do not exist in nature. Such a dividing line must necessarily be purely arbitrary, for in reality there is no separation, one thing shades imperceptibly into the other. The change from the forms inhabiting the wet coast of British Columbia to their representatives that occur farther south, is a gradual one and keeps even pace with the change in climatic conditions. The farther south we go from Puget Sound the less strongly marked is the rich and deep coloring that characterizes the birds of that region. On the Oregon coast a difference already appears, in the region of Cape Mendocino it has become greater, about San Francisco the divergence from the typical forms is still wider, yet even here the affinity to the Northwest Coast races is very close. If, for the sake of convenience, we are to lay down imaginary boundaries where Nature has imposed no separation, it is probable that in the present case the line would have to be drawn somewhere between San Francisco and Santa Barbara. — not as far up the coast as Cape Mendocino.

Mr. Chapman further discusses the influence of the moist coast climate upon the differentiation of local races, and illustrates his remarks by a table of 31 characteristic coast forms contrasted with their representatives in the interior. In bringing about this differentiation he says: "heavy rainfall and humidity are primary factors, but the more immediate agents are the dense vegetation and clouded skies of a moist region which afford protection from the 'bleaching' rays of the sun." In other words it is simply a question of exposure to light, and the relative moisture of the atmosphere has nothing directly to do with the result. This is an assumption which may well be questioned.

Among other interesting things brought out by his study of these collections Mr. Chapman finds that species, which in the arid regions of the western United States are "differentiated from their Eastern allies, in several instances appear in British Columbia in a plumage which more nearly, if not exactly, resembles that of the Eastern form." Examples mentioned are *Chordeiles virginianus*, *Poocætes gramineus* and *Spizella socialis*. It

may be possible that in these cases approximately similar climatic conditions have, as Mr. Chapman states, resulted in the development of similar characters, but is it not more probable that the likeness is due, at least in part, to a recent genetic connection with the true Eastern forms which in their northwestern extension across the continent exist not so very far to the northward of British Columbia. There are no impassible physical barriers to prevent such an origin of the birds in question, and may not a connection be to some extent still kept up by the occasional infusion of fresh blood of the Eastern form by means of an annual migration from the northward?

The author also mentions one or two instances where, among series fairly characteristic of the interior or of the coast forms, individuals occur showing strongly marked characters of an Eastern race. Why might not this too be the result of interbreeding with a stray migrant from the northward? It is generally believed that the bulk of the 'Eastern' birds inhabiting the Mackenzie Basin and the interior of Alaska migrate southeasterly, keeping to the eastward of the Rocky Mountains. The occurrence of stragglers of various species southward along the Pacific coast makes it seem not unreasonable that there should be a similar, though very limited, migration through the valleys of the interior, trifling, perhaps, in numbers, yet amply sufficient to account for such facts as these.

Following the introduction comes a formal list in which 160 species are considered in detail. "In every instance specimens have been received unless a statement is made to the contrary." Mr. Streater's field notes are usually brief, but of course are of much interest, coming from regions of which we have so little definite knowledge. Mr. Chapman adds in many cases important, and sometimes extended, technical notes bearing chiefly upon questions of geographical variation.

The paper ends with a table "giving the number of specimens of each species contained in Mr. Streater's collection, and also the localities at which they were obtained," thus showing exactly upon what material every conclusion of the author's is based. It would be a most desirable thing if other writers would follow this example of Mr. Chapman's. The table is a fitting conclusion to an excellent piece of work, one that on more grounds than one takes rank as an important contribution to ornithology.—C. F. B.

Hagerup and Chamberlain's Birds of Greenland.*—This book, prepared by Mr. Chamberlain from material furnished by Mr. Hagerup, consists of two parts. The first, an annotated list of the 'Birds of Ivigtut,' is based upon a former paper by Mr. Hagerup published in the 'The Auk' two years ago (Vol. VI, pp. 211-218, 291-297). This has been revised and corrected, and includes the results of experience gained by Mr. Hagerup

*The | Birds of Greenland. | By Andreas T. Hagerup. | Translated from the Danish | by | Frimann B. Arngrimson. | Edited by Montague Chamberlain. | Boston: | Little, Brown, and Company. | 1891.—3^d, pp. 62.

during a second stay of fifteen months at Ivigtut. The accounts of the breeding and habits of the birds contain much that is interesting, and some remarkable facts are brought out in regard to the migratory movements of certain species; considerable attention too is given to the changes of plumage of several of the species. There are unfortunately a few cases in which Mr. Hagerup seems to have neglected his opportunity of settling the status of some doubtful forms by the reference of large series to some high authority for determination.

The second part, a 'Catalogue of the birds of Greenland,' "comprises all the birds discovered up to date in that part of western Greenland which is settled by the Danes; namely, the country lying south of 73° N. lat." It "is based on the works of Holboll, Reinhardt, Alfred Newton, Ludwig Kumlien, and others; use has also been made of the late Alfred Benzon's collection of bird-skins and eggs," which has supplied much material especially in regard to times of breeding; and Mr. Hagerup's own experience has furnished its quota. The annotations are as a rule quite brief. "Of the 139 species here enumerated one [*Plantus impennis*] is extinct and 53 are merely accidental stragglers, while 24 others are so rare that they might be classed with the accidentals, leaving but 61 species that should be recognized as regular inhabitants of Greenland; and of these several are of quite uncommon occurrence. (M. C.)." Of the smaller land birds a majority are North American species entered as "chance visitors." The Catalogue is greatly benefitted by Mr. Chamberlain's critical notes though he has used his editorial privilege almost too sparingly. Explorers of Greenland, and indeed all who are interested in the fauna of this or other boreal regions, will find this work a most useful hand-book. —C. F. B.

Nicholson's Translation of Sundevall's 'Tentamen.'*—Mr. Nicholson has done good service in placing within the reach of English speaking ornithologists Sundevall's celebrated essay on the classification of birds, originally published in Latin in 1872. For a time, and in certain quarters, Sundevall's system met with much favor, though in many respects arbitrary and artificial; yet at many points it was an advance upon what had been done before. The essay opens with a preface, in which he explains the basis of his work as regards material examined, and makes several pertinent strictures upon the practices of some of his predecessors in respect to imperfect citation of names and references to localities whence specimens are derived. This is followed by the 'Introduction,' giving 'Remarks on the Development of the Ornithological System' (pp. 1-11); 'On the Notion of Affinity as a Principle of Natural Systems' (pp. 12-20); 'Concerning the Object of Systems in Natural History and the Properties involved in them' (pp. 21-25); 'Remarks on the Ornithological

*Sundevall's | *Tentamen*. | [*Methodi Naturalis Avium Disponendarum* | *Tentamen*.] | Translated into English, | with Notes, | By Francis Nicholson, F. Z. S., | Member of the British Ornithologists' Union, | Corresponding Member of the American Ornithologists' Union. | London: | R. H. Porter, | 18 Princes Street, Cavendish Square, W. | 1889.—8vo. pp. xiii, 316, with frontispiece (portrait of Sundevall).

Classification followed in this Work' (pp. 26-29); 'Remarks on Systematic Nomenclature' (pp. 30-42). Then comes the main body of the work, entitled 'An Exposition of a Method of a Classification of Birds' (pp. 43-252). Three pages, then follow devoted to observations on certain genera of doubtful position in the system, and a page of corrections and additions. An 'Index to the Generic Names' mentioned in the work occupies pages 260-286; they number about 2400, of which 900 are considered as superfluous and 300 as synonyms. A list of 'Generic Names added or altered in this Work' follows. All this is followed by an 'Appendix' (pp. 291-305) devoted to 'Ornithographic Terms; or the names of the external parts of Birds,' illustrated with a plate. The translator has added various foot notes, "giving references to recent publications, in the hope that they may assist the student"; he has also added two appendices, the first giving a summary of Sundevall's system (by Mr. R. B. Sharpe, from the 'Zoölogical Record' for 1872), the second giving the outlines of Sundevall's later arrangement of the Accipitres and the Thrushes, both published in 1874, almost Sundevall's last work, his death occurring the following year.

The work thus contains much that the student of today may consult with profit, aside from the historic interest of the essay as one of the leading attempts at a natural classification of birds.

In the 'Remarks on Classification' are many passages of special interest, particularly his discussion of "the time from which the use of binomial nomenclature in Zoölogy ought to date." He says: "Generally the year 1766 is taken, being the date of publication of the twelfth edition of the 'Systema Naturæ,' which is also the one best known. . . . This is nevertheless an entirely false notion. This nomenclature is brought forward as a principle, and followed out through the whole Animal Kingdom, in the *tenth* edition of the same work, that published in 1758, and it really dates from that time. This observation is the more important, because in this edition many species are a great deal better characterized than in the twelfth, where incorrect synonymy and other mistakes are often introduced, and where some species are entirely omitted. . . ." This in reference to specific names. Generic names in Zoölogy commence "with the first edition of Linnæus's 'Systema Naturæ,' published in 1735, this being the first work where genera form an essential part of a system of Zoölogy," etc.

As already said, we believe Mr. Nicholson has done good work in making Sundevall's important essay readily accessible to a large class of students who would be unable to make use of the original edition. The work is admirable in typographical execution.—J. A. A.

Goss's 'History of the Birds of Kansas.'*—As a handbook or manual of the birds of a definite area, Colonel Goss's 'History of the Birds of Kan-

* History of the Birds of Kansas | — | By N. S. Goss. | — | Illustrating 529 Birds. | — | Topeka, Kansas: | Geo. W. Crane & Co., Printers and Binders. | 1891. —Royal 8vo. pp. 692 + 1 l., and 35 photogravure full-page plates.

sas' might in many ways serve as a model to future writers of similar works. As its title indicates, the work is strictly limited to the birds known to occur within the State of Kansas, which now number 343 species and subspecies. The technical descriptions are borrowed, "chiefly from 'North American Land and Water Birds,' by Baird, Brewer, and Ridgway," for which due credit is given. No synonymy or bibliographical references are included, further than is implied in the concordance, in which, in addition to that given in the A. O. U. Check-List is included a reference to the author's own 'Revised Catalogue' of Kansas birds, published in 1886, and to the A. O. U. Check-List itself. Nothing further is really necessary in a work of this character, the A. O. U. Nomenclature being strictly followed.

The character of the text is hence as follows: The characters of the higher groups are given in full, from the source already indicated. The text under each species consists of the A. O. U. Check-List names (both English and Latin), followed (1) by a reference to the plate where the species is figured; (2) a summary statement of the nature of its occurrence in Kansas; (3) its concordance; (4) its habitat; (5) technical description; (6) life history, based mainly on the author's own personal experience.

Colonel Goss has been a great wanderer in pursuit of ornithological knowledge, and it is a pleasure to find his pages on Kansas birds enriched by references to his experience with many of the species mentioned in the Gulf of St. Lawrence and the maritime Provinces of Canada, in Florida, Wisconsin, and Texas, on the Northwest Coast, and in various parts of Mexico and Central America. His bird biographies thus abound with fresh material, given in a most unassuming and very pleasant way. The descriptions of the nesting habits and the eggs are generally very full. His own experience, however, is supplemented in many instances by extended quotations from other authors. In general it may be said that the work adds greatly to our knowledge of many species of North American birds, and is in every way a credit to its conscientious and painstaking author.

Typographically the work is very attractive, while the plates are a novel feature, and, as an inexpensive method of illustration, may be regarded as a success, quite excelling in effectiveness any previous attempt at photo-engraving in ornithology we have seen. In fact, the plates are little less than a revelation respecting the possibilities of photogravure as an aid in ornithological illustration. The figures are all from mounted specimens in the 'Goss Ornithological Collection,' in the State Cabinet at Topeka and the work of Col. Goss himself. They are arranged in plates containing from five or six to twenty or more figures, grouped so as to be photographed all at one time, and thus all presented on practically the same scale. While the perches necessarily give a stiff and rather inartistic effect, the markings of the plumage and the general character of the birds come out with wonderful clearness and effectiveness, even in figures less than an inch in length. There are here and

there defects evidently due to haste or lack of care, as explained by the author in a note at the end of the volume. Much of the success attained is of course due to the excellent quality of the specimens as regards mounting, etc.—J. A. A.

A Forgotten Volume.—In looking through stores in New York where old books are sold, I lately came across a time-stained copy of the first volume of Audubon's 'Ornithological Biography' bearing on its title-page the following imprint:—Philadelphia: | Judah Dobson, Agent, 108 Chestnut Street; | and | H. H. Porter, Literary Rooms, 121 Chestnut Street. | MDCCCXXXII. A casual glance was sufficient to disclose that it was not the Edinburgh edition with the Philadelphia title-page (Philadelphia, E. L. Carey and A. Hart, MDCCCXXXII). Later, comparison with the Edinburgh has shown that the two are wholly distinct so far as typographical features are concerned. In the text there are slight verbal differences which tend to prove that this Philadelphia issue was printed before the one from abroad. I find no mention of this edition of volume one in the bibliographies I have access to. The attention of the Linnean Society of New York was called to the matter and the book exhibited at a meeting in February. It has also been inspected by Mr. George N. Lawrence. To all, however, it was unknown. There is doubtless a story back of this volume, the recital of which cannot fail to be of interest to the curious bibliophile.—LEVERETT M. LOOMIS, *Chester, S. C.*

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GENERAL NOTES.

A Breeding Place of *Pelecanus fuscus*.—About the middle of March, 1882, while fishing and sailing on the Indian River, Florida, between Rock Ledge and the Indian River Inlet, my boatman took me to see a Pelican breeding place. The island where the birds *bred* was about two acres in extent, as near as I can remember, and not far from the east shore of the river. It was opposite a point on the west bank of Indian River, some two miles or more below the mouth of the St. Sebastian River. As the tide was low we pushed our boat as far up towards the land as we could, and waded ashore in the mud; landing through a gap in the low mangroves that fringed the island.

A dense mass of birds had risen at our approach and spread out over the island like a cloud. This great flock was joined by the laggards as we walked about; and the rush and roar of the flapping wings was tremendous. There were hundreds of birds in the air—perhaps a thousand. In tramping about, it was difficult to take a dozen steps in any one direction without treading on empty nests, fresh eggs, or young birds. Every stage of development was seen, from the new egg to the downy, ridiculous, full-grown young ones. The guano was so deep on the ground that

all vegetation near it was killed. Nearly all the trees and bushes above water line were dead or dying from this manure.

I remember seeing no other bird than the Brown Pelican. Unfortunately I took no notes at the time, but perhaps this imperfect account may be of some value as I hear the hatching places there are getting very scarce.—ROBERT H. LAWRENCE, *P. O. Humptulips, Washington.*

The Whistling Swan in Massachusetts.—I have lately purchased a Whistling Swan (*Olor americanus*) of Frazar Bros., the Boston taxidermists, who received it in the flesh from Michael McCarthy of Auburndale by whom it was killed December 17, 1890, in Weston, Massachusetts. It is a male, apparently an old bird for the plumage is perfectly free from grayish although somewhat soiled, perhaps by handling after death. Mr. McCarthy has given me the following account of the circumstances attending its capture:

He was walking along the west bank of Charles River near Norumbega Tower at about half past six o'clock in the morning, looking for ducks, when he saw seven large white birds within a yard or two of the shore in a bay where the water was perhaps two feet deep. They were apparently feeding on the bottom, thrusting their heads and long necks under the water every few seconds. He succeeded in getting within about seventy-five yards of them and fired, killing one, when the others at once rose and flew out of sight, following the course of the river towards Waltham, two, which were probably slightly wounded, lagging behind the rest. All looked pure white like the one captured. The latter weighed seventeen pounds. The morning was cloudy with an east wind which brought rain about noon. There was a little ice in the middle of the river but the water along the shores was perfectly open.

Charles River at the place where these Swans were seen is a broad, sluggish stream, expanding in a succession of bays and bordered on both banks by nearly unbroken stretches of woods.

There are three previous records of the occurrence of the Whistling Swan in Massachusetts within recent years, the first (Bull. Nutt. Club, III, 1878, p. 198) of a bird taken by F. P. Chadwick, March 4, 1878, on Coskata Pond, Nantucket; the second (Bull. Nutt. Club, IV, 1879, p. 125) relating to a specimen in the collection of the Boston Natural History Society which is supposed to have been shot at Nahant by a Mr. Taylor about the year 1865; and the third (Bull. Nutt. Club, VI, 1881, p. 123) of a flight of five birds seen passing over Somersett, October 16, 1880, by Mr. Elisha Slade.—WILLIAM BREWSTER, *Cambridge, Mass.*

The Green Heron (*Ardea virescens*) Wintering in South Carolina.—On December 16, 1890, I was very much surprised to see a Green Heron. As I wanted to see if the bird would really winter, I refrained from shooting it. I saw the bird again on January 9, 1891, and several times during the middle and latter part of the month. The last time I saw the bird was on February 13. This is the first instance I have of the Green Heron wintering.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

Some Rookeries on the Gulf Coast of Florida.—In a late number of 'The Auk' (Vol. VII, p. 221) Mr. W. E. D. Scott states that "there are absolutely *no* Heron rookeries on the Gulf coast of Florida, from Anclote Keys to Cape Sable." Mr. Scott has overlooked at least one rookery of fair size.

From April 19 to May 9, 1890, I was cruising along the Gulf coast, starting from Little Sarasota Bay, going as far as Ten Thousand Islands, and returning to the point of starting. My object was to take eggs of the various species said to breed along the coast. Moving along leisurely, rarely making more than twenty miles a day, the shore and islands were examined very closely.

Going south the only rookery noticed was one at the entrance to Charlotte Harbor, east of Pine Island; it was on a small mangrove island, and only Brown Pelicans and Florida Cormorants were breeding on it, probably four or five hundred pairs. Another one, also of Pelicans and Cormorants, about a hundred pairs I judged, occupied a mangrove island about fifteen miles southeast of Cape Romano.

On returning northward Pine Island was passed on the west side, through San Carlos Bay. A Pelican and Cormorant rookery on a small mangrove island was examined, and more than two hundred nests were counted on it. Opposite Captive Pass I was attracted to a mangrove island about two hundred yards long and a hundred yards wide by seeing a large flock of Frigate Pelicans circling about high above it. The boat was pointed towards it and on nearer approach several Herons were seen flying to and from the island. It was covered with mangroves, red and black species, tall slender trees forty feet in height. About sixty or seventy Herons' nests were examined, not more than a fifth of the number seen; the two species breeding were the Louisiana Heron and the Reddish Egret. One Egret's nest was found to five of the Louisiana Heron. The majority held young birds at this date, May 3. Many Cormorants also were nesting with them but no Brown Pelicans' nests were found and none of the Frigate Pelicans'; none of the latter alighted on the island while I remained.

Ten nests of the Great Blue Heron, two holding young ready to fly, were noticed on a small island two or three miles from the heronry; about fifty pairs of Cormorants were nesting with them.—H. K. JAMISON, *Manayunk, Philadelphia, Pa.*

Migration of the Red Phalarope (*Crymophilus fulicarius*).—During a four weeks' cruise to the Gulf of St. Lawrence last spring, I gained considerable information concerning the migration of the Red Phalarope. I sailed from Gloucester on May 24, and the first Phalaropes were seen on the following day, being more or less abundant until reaching Cape Breton Island. They were not again seen until, passing Cape North, we entered the Gulf of St. Lawrence. The exact position of the first birds seen was lat. $43^{\circ} 2'$, long. $69^{\circ} 13'$, or 132 miles W. by N. of Seal Island on the Nova Scotia coast. At this point seven were seen at 11 A.M.,

two at 3 P. M., one between three and four, and five during the following hour, the last being in lat. $43^{\circ} 25'$, or 27 miles N. E. by E. half E. from the point of first observation. All were flying E. by N.

The following morning, May 26, observations were commenced at four o'clock, but no Phalaropes were seen until 5 A. M. when small bunches, estimated to contain, in all, twenty-five birds passed, flying E. by S. A single pair was seen at 1 P. M., and ten were recorded at two o'clock. Single birds were noted at 4 and 6 P. M., and an estimated number of thirty was recorded at the end of the following hour. At 8 P. M. a flock of ten or twelve was heard as they flew overhead, passing south. The position of the first record of the day was lat. $43^{\circ} 30'$, long. $68^{\circ} 25'$, and the distance between the extreme stations of observation was 82 miles, the latitude of the latter being $43^{\circ} 47'$, and the longitude, $66^{\circ} 33'$, or a position 18 miles N. W. by W. of Gannet Rock.

On the morning of the 27th we were in sight of this island, and as it was nearly calm all day, we only succeeded in passing Cape Sable by sunset. During the entire morning Phalaropes were seen coming from up the bay and flying southerly, or out to the open ocean. They were in pairs, small bunches, or flocks of a hundred or more, but towards night it grew foggy, and we came upon them by thousands, settled in rafts upon the water. When approached they would rise just out of gunshot, fly a short distance, and again settle. These very large flocks seemed to be resting, and I am certain that no migration was taking place at that particular time. We passed Cape Negro very early in the morning of May 28, and when my first record was made at 4 A. M., we were 'jogging' off Shelburne, at which place we put in at noon on account of threatening weather, remaining until the morning of May 30. During the morning, and until entering the harbor, flocks of Phalaropes varying from two to several hundred were recorded, all of which were flying out to sea.

We continued along the coast on the 30th, reaching and entering Liverpool during the latter part of the afternoon. Thousands of Phalaropes were seen during the day, flying in a leisurely way and frequently settling on the water. On the afternoon of the following day, May 31, a number of small flocks containing from three to thirty each, were seen between La Haye and Sambro Light, off Halifax; they were not nearly as abundant as on the previous day, and all were hurriedly flying to the eastward. On June 1 but three of the hourly records included Phalaropes, viz., the 6 and 11 A. M., and the 4 P. M., when one, seven, and twelve were seen, respectively, all flying E. by N., and not stopping to feed. No more were seen until we passed Cape Canso and were off Chedabucto Bay on June 3, when one was seen flying south at 4.30, and three flying east at 5 P. M., they being the last that were noted until rounding Cape North from the eastward, and although I inquired of fishermen at various times, especially at Louisbourg, off Scatari, at Sidney, and at Inganish, I failed to hear of any except a very few stragglers off Scatari Island on the 5th or 6th. I questioned very closely at Inganish and found that these birds usually passed that place, but had not been seen this year. As

they are considered one of the most reliable signs of mackerel, they would not have been readily overlooked. On the other hand, I spoke the captain of a Prince Edward's Island smack near Cape St. Lawrence, who had seen flocks aggregating as he estimated, two or three hundred, in the Gulf at about lat. 47° and long. 61° on June 5, and another skipper informed me that, while crossing from Bird Rock (the northernmost and eastern island of the Magdalen group), to Cape St. Lawrence, on June 7, he met large flocks of Phalaropes which he estimated at 5000 or more, all flying toward Bird Rock, and mackerel were also seen travelling in the same direction. My last note is of three birds seen on the morning of June 13, between Cape North and Cape St. Lawrence; they were flying east at the time.

On May 27, 28, and 30, the centre of abundance was reached among the Phalaropes and during that time there was but a single school of mackerel seen. On May 31 the main body of fish appeared, but the great rafts of Phalaropes had apparently passed to the eastward.

The Phalaropes have a variety of names which are common among the fishermen, those generally used being 'Sea Geese,' 'Mackerel Geese,' 'Whale Birds,' and 'Gulf Birds,' the latter being especially used for the species here discussed. A very technical appellation is simply 'Birds,' a term used in connection with them alone and never confounded, as there are no other birds to them except 'Chickens' (Petrels) and Hags. They are said to be very tame at times, especially when south of Cape Cod, but my observations were quite the reverse, as I was seldom able to reach them with birdshot. Some were in the perfect spring plumage but more had irregular patches of white feathers on the under parts and a few had no red markings at all; the sexual organs were not especially active in any that I dissected.

The Phalaropes, with a few other species, as the Shearwaters, Petrels, and Jaegers, are the characteristic birds at a distance from the land. The period of excessive plentifulness occurred from May 27 to 30 inclusive, and the area covered was about ninety miles broad. Our speed was very moderate and all birds which were seen when flying, pursued nearly the same course as that which we were taking, but passed by us very easily. Upon sighting land the birds became more abundant and I think it probable that the main body of Phalaropes commenced to overtake us on the 27th when off Cape Sable. They gradually increased in numbers all through that day and during the following morning when we were off Shelburne. As previously stated, we remained in that port until the 30th, and during the intervening time, a strong northerly gale was blowing, which may have retarded migration to some extent, but it is hardly probable that the movement was brought to a full stop; when we resumed our course on Friday morning, the numbers of Phalaropes were at their greatest, but nearly all had passed ahead before we reached Live:pool at 4 P. M., and on the following day birds were rare.—HARRY GORDON WHITE, *Woods Holl, Mass.*

Breeding of *Totanus solitarius* and *Otocoris alpestris praticola* in Western Pennsylvania.—A single pair of Solitary Sandpipers remained to breed here through the season of 1890, frequenting a small pond and an adjacent stream. All attempts to discover their nest proved futile, although later on in the season they appeared accompanied by their young. The species is common in the migrations in spring and fall.

On June 10, 1889, while driving along a highway in Butler County, I saw a pair of birds running about in the dust some distance ahead which I did not at once recognize. Hastily getting out, I approached nearer, and, after a little manœuvering, was agreeably surprised to find that they were Prairie Horned Larks. I wished very much to kill them, but had unfortunately left my shotgun behind. The pair undoubtedly had a nest in the immediate vicinity, but at any rate their presence at such a date would be of itself sufficient to prove that they were breeding at the time. This instance, I believe, considerably extends the known breeding range of the species in Pennsylvania.—W. E. CLYDE TODD, *Beaver, Beaver County, Pa.*

***Falco islandus* L. in Labrador.**—We have received a specimen of this bird from Ungava Bay shot by Mr. Thos. Mackenzie in 1890. To make certain of the identification, I forwarded the bird to Mr. H. E. Dresser who along with me is under the impression that this is the first record from that district.—J. A. HARVIE BROWN, *Dunipace House, Larbert, N. B.*

Protective Coloration in the Genus *Ægialitis*.—To the protective colors which are usual among the shore birds I had always considered the neck and head markings of the genus *Ægialitis* a striking and curious exception, till a short time ago when looking at an *Æ. semipalmata*, which I had wounded, trying to hide by crouching in a hollow in the sand; and while admiring the perfect blending of its brown shades with the surroundings I saw in its white rings one of the commonest objects of the sea shore—the empty half of a bivalve shell. The white about the base of the bill was the ‘hinge,’ the collar the outer rim, and the top of the head the cavity of the shell, filled—as they usually are—with sand.

In the cabinet drawer the resemblance is not so noticeable, but such resemblances rarely are, and it was striking among the natural surroundings when I first observed it, and it is most perfect when the bird is crouching as it does in the presence of danger or when on its eggs. Not only are these shells found along the water's edge, but they are carried far above high-water mark by several agencies, and are common in such places as these birds breed in, their cavities discolored or filled with sand, their curved edges kept bright by exposure and friction. I now consider these beautiful markings a clear case of ‘protective coloration.’—WM. V. PRAEGER, *Keokuk, Iowa.*

A Peculiar Character Referable to the Base of the Skull in *Pandion*.—As is well known, in all ordinary birds the anterior orifice or orifices of

the eustachian tubes open, mesially, at the nether aspect of the base of the sphenoidal rostrum, just in front of the basitemporal region. This common or double aperture is often underlapped by a lip of bone, while the walls of the tubes themselves are usually completely ossified. Now in some Accipitres these walls, anteriorly, are not completed in bone, but in the dried skull exhibit more or less of an open tract. *Pandion* is remarkable in having the anterior openings of its eustachian tubes *entirely closed*, and it will be interesting to know whether this at all modifies the sense of hearing in this bird. The character is present in three different skulls of adult specimens that I have examined, so it is presumably constant, and, at the present writing, so far as I am aware it stands unique among birds.

Since writing the above paragraph, Mr. F. A. Lucás, of the U. S. National Museum, has very kindly sent me the head of a recently killed specimen of *Pandion*, and I have had the opportunity of dissecting it while the parts were perfectly fresh. They confirm what I have written above, inasmuch as the anterior aperture or apertures of the eustachian tubes do not open in the middle line of the cranium above the anterior spine of the basitemporal. But the osseous antero-lateral walls of the passages in question are patulous, at some distance, upon either side, from the median line, and the *fleshy* parts of the eustachian tubes communicate therewith. By means of a fine bristle, I found either passage communicated, as usual, with the middle ear, and so there can be no question as to the functional status of those organs in the Osprey. The external auricular cavities, however, are small, and in either one I found a loose plug of some size, of a substance that had the appearance of a blackish wax, and this is sometimes seen in other large birds.—R. W. SHUFELDT, *Takoma, D. C.*

Megascops asio macfarlanei—A Correction.—Since the appearance of the advance sheets of my paper entitled 'Descriptions of Seven supposed new North American Birds',* I have been informed by Captain Bendire that Mr. MacFarlane's name is Roderick Ross MacFarlane, not Robert MacFarlane as given in my foot-note under *Megascops asio macfarlanei*. The mistake is to be regretted but I trust it will be excused in view of the fact that the name has been repeatedly, if not invariably, printed as R. MacFarlane, Robert MacFarlane, or Robert McFarlane. The form last named appears in the latest list of corresponding members of the American Ornithologists' Union (Auk, Jan. 1891, Supplement p. xiii).—WILLIAM BREWSTER, *Cambridge, Mass.*

Scott's Oriole (*Icterus parisorum*) in Central New Mexico.—The first of July, 1890, while in camp near the northern end of the Sandia Mountains, some twenty-five miles from Santa Fé, New Mexico, I saw a pair of

*Published in this number of The Auk, pp. 139-149.

adult Scott's Orioles followed by two young of the year. The birds were insect-hunting among the dwarf cedars of the foothills a few miles back from the Rio Grande River. I managed to secure one of the young birds by 'winding' it with a rifle ball and it is now in the National Museum at Washington, D. C.

At this same time a friend came to my camp and described a curious black and yellow bird he had seen recently at the foot of the San Pedro Mountains, fifteen miles east of my locality. This bird was also seen in the cedars of the foothills, and was unquestionably an adult male of this species. From these observations it is quite probable that this Oriole breeds north at least to the Sandia Mountains in central New Mexico.—E. W. NELSON, *Springerville, Arizona*.

Scott's Oriole in California.—I have lately received from Mr. C. H. Marsh, who is living near San Diego, a fine adult male Scott's Oriole (*Icterus parisorum*) in full breeding plumage, with the following details. On May 16, 1890, he came upon a pair in an alder tree in Telegraph Cañon, about ten miles from San Diego, and about the same distance from the Mexican line. He shot the male, letting the female go. He discovered their nest in the same tree, only five feet from the ground; it contained a single young bird. Mr. Marsh has seen only this pair in a residence of several years. He adds that when living at Silver City, New Mexico, (up to 1887, I think) he obtained them occasionally.

The occurrence of this Oriole in Lower California has been noted by several (Belding, Bryant, Anthony), and in 'The Auk' for January, 1885, Scott has given a full account of its breeding in Pinal County, Arizona; but I have seen no record of its having been found breeding within the limits of California proper.—F. C. BROWNE, *Framingham, Mass.*

Nesting of the Cerulean Warbler (*Dendroica cerulea*) in Beaver County, Pennsylvania.—This species, reported to be exceedingly rare in most sections, is here common as a migrant and tolerably common as a summer resident. (But compare, in this connection, Wheaton, *per* Coues, Birds of the Northwest, p. 233.) It has not as yet been found in Butler and Armstrong Counties. In the breeding season it is partial to high, open, oak woods, as well as to low, damp, beech woodland, in which places I often see five or six pairs in the course of as many hours' walk. Inhabiting as it does the terminal foliage of the highest forest trees, it would easily be overlooked even by the most careful of observers, were it not for the peculiar notes of the male, which are readily distinguished from those of any other Warbler, and which suffice to disclose its presence. I can scarcely describe this song, beyond saying that it is a genuine Warbler song, and that its last notes somewhat resemble the 'drumming' of our locust (*Cicada*); but once heard it is not apt to be forgotten.

It was with these facts in mind that on May 24, 1890, I determined to put my previous experience to a test in finding the nest of the species.

Proceeding to a patch of woodland in which I had previously located two pairs, I quickly discovered one of the males, and in the course of half an hour his mate appeared, whereupon I transferred my attention to her. After an hour's patient watching she at last was seen to go to her nest, which was thus discovered to be saddled on the fork of a horizontal branch of a certain kind of tree, far out from the trunk, and fully 50 feet from the ground. The only way it could possibly be reached was by climbing a tall, slim butternut tree adjacent, thus enabling one to scoop out the eggs by means of a net attached to the end of a pole. However, on May 26 the plan was successfully carried out, though not without considerable risk; in addition the nest was secured and the female bird shot, thus putting the identification beyond question. The male came about at the time, but apparently manifested little concern.

The nest was a small, neat structure, tightly fastened to its branch, and composed mainly of weed stalks and strips of bark, though the outside, whose texture was rendered firmer by means of a plentiful supply of saliva and cobwebs, presented a decidedly white appearance, owing to the color of the stems composing it as well as to the bits of paper and hornets' nest added. The lining was simply finer weed stalks. It contained three eggs of the Warbler and one of the Cowbird, all fresh, so that the set was probably incomplete. In color they almost exactly resemble a set of American Redstarts in my collection, differing only in being slightly shorter. The ground-color is white, with a rather decided suggestion of bluish-green, spotted over, in the style of most Warblers, with reddish-brown, the spots tending to aggregate at and around the larger end.

The eggs, the nest, and the female bird are now in the collection of Dr. C. Hart Merriam of Washington, D. C.—W. E. CLYDE TODD, *Beaver, Beaver County, Pa.*

Marian's Marsh Wren (*Cistothorus marianæ*) **on the Coast of South Carolina.**—On December 16, 1890, I shot a fine adult male of this new bird. This specimen was the only one I could find, although the Long-billed Marsh Wren was very abundant the same day. This record extends its range about two hundred miles or more to the northward.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

The Bluebird Wintering near Boston.—On the 9th of December, 1890, my neighbor, Mr. E. F. Holden, reported a Bluebird in the village. I found one in the same valley on the 21st of that month, and saw it afterward at different times up to February 5. My own dates were as follows: December 21, 22, 27, 29; January 3, 30; February 1, 4, 5. On three of these occasions the bird was perched in an ash-tree beside an old barn, in which I suspected it of finding shelter. At three other times it was within a very few rods of the same spot, and at the farthest it was less than a quarter of a mile away. The casual appearance of a Bluebird here in mid-winter would not be worthy of record, but I am not aware that one has ever been

reported as actually spending the winter with us. The present season, it should perhaps be added, has been exceptionally severe.—BRADFORD TORREY, *Melrose Highlands, Mass.*

Notes on the Occurrence of Uncommon Species at Beaver, Pa.—*Clangula hyemalis*. LONG-TAILED DUCK.—On April 15, 1890, a party of three, all females, appeared at the mouth of the Big Beaver Creek, of which two were secured by one of the local gunners and given to me for inspection. The fact is certainly somewhat worthy of remark considering the lateness of the date and the mildness of the previous winter.

Phalaropus lobatus. NORTHERN PHALAROPE.—On the 26th of September, 1890, while pursuing a wounded duck, a bird of this species flew past me and alighted not a dozen paces away, showing no more fear or suspicion than would a Least Sandpiper. My shotgun missed fire twice before I at last secured it, in a condition unfortunately quite unfit for preservation. The only note it uttered was the chirp, which, more or less modified, characterizes nearly all the Shore-birds.

Tringa bairdii. BAIRD'S SANDPIPER.—Shot a single individual of this species September 16, 1889, while in company with a couple of Semipalmated Plovers.

Geothlypis philadelphia. MOURNING WARBLER.—Two specimens have been taken thus far, one on May 11, 1889, the other on May 21, 1890, which dates, though in different years, probably represent the extremes of migration at this place.—W. E. CLYDE TODD, *Beaver, Beaver County, Pa.*

Cistothorus marianæ, *Buteo lineatus alleni*, and *Syrnium nebulosum alleni* in South Carolina.—A very interesting collection of birds made by Mr. James E. Benedict, of the National Museum, on the coast of South Carolina (near Charleston), in January, 1881, contains several specimens of the first-named of the above mentioned species and one each of the other two—all perfectly typical. The *Cistothorus* is so exceedingly different from *C. palustris*, in both plumage and proportions, judging from these specimens alone, that I could not doubt their specific distinctness.—ROBERT RIDGWAY, *Washington, D. C.*

CORRESPONDENCE.

[Correspondents are requested to write briefly and to the point. No attention will be paid to anonymous communications.]

Camera Notes for Ornithologists.

TO THE EDITORS OF THE AUK:—

Dear Sirs: At the last Congress of the American Ornithologists' Union there were exhibited many photographs of all sorts of ornitholog-

ical subjects, and the majority of them were examined by the writer with great care. For one, I was disappointed in the results arrived at by the authors of the most of them; as there appeared to be such a total absence of any practical result attained. Among the best that I saw were some taken by Dr. Edgar A. Mearns, but even those, the work of a most painstaking naturalist, did not come up to what the camera is capable of performing for practical ornithology. Little or nothing is to be gained in this latter direction by photographing bunches of game, or badly mounted specimens, and similar subjects. Any tyro can accomplish as much as that, and ornithology not be called upon to thank him for it.

In the present communication it is the writer's object to relate some personal experiences which may be of assistance to those interested in this line of work.

Now in the first place as to some of the objects to be attained: There are a number of these. We may desire, for example, a sharp, clear photograph, which either may be natural size or may present the subject reduced, for the use of the lithographer, in order to place in the latter's hands an *accurate* figure to be copied on to stone, and the plates printed therefrom to be used for illustrative purposes. The subject may be a bird, its young, or its nest, or a dissection of a bird, or its skeleton, or its eggs, and so on indefinitely. Owls present to many artists difficult subjects to draw satisfactorily, but there is no reason why we should not, by the aid of the camera and a 5 X 8 plate, for a small sum, and in very short order, have ready for the lithographer a life-size figure, and a perfectly accurate one, of such a species as *Nyctala acadica*, or upon a similar plate a handsomely reduced figure of *Bubo virginianus*. Again, by varying our material colored figures are easily obtained for like purposes. Photographs of this character may also be used to make *woodcuts* from, or they may be reproduced by some of the various styles of 'process work.' Yet another object:—We may desire to produce by the aid of a camera an accurate figure of any of the above-mentioned subjects from which an *electrotype* can be *directly* made. This also is now easy of accomplishment, and such illustrations meet a vast variety of needs in descriptive ornithology. These then are some of the principal objects to be attained, viz.:—*Clear, accurate figures*, either life-size or reduced to *any* desired size, and either plain or colored, which (by the use of different materials) can be used *at once*, by either the lithographer, the wood-engraver, the 'process worker,' or the electrotyper.

Your material must be of the *best* in all particulars. I use a large, first-class, quick-working lens; a Blair's camera for the 5 X 8 plate; the iron and oxalate developer, using the chemically pure material (filtered); bichloride of mercury and ammonia for intensifying, etc., etc.

Our method of procedure can best be illustrated by a few examples. Say we wish to reproduce, life-size, a Hawk's egg. Suspend on the wall opposite and under the strong sun light a smooth, half-inch, pine board. Cover this with *white* blotting-paper, held on with some half dozen artist's thumb-tacks. Of course your egg is to be blown, and not show

the opening. Next you decide whether or no you desire it to throw a shadow; if you do you simply fasten it to the blotting paper with a small piece of soft wax, exposing to the camera the side you wish represented. If you do not, you insert a piece of wire a few inches long into the board, and perpendicular to it, and fasten the egg to the end of it with a soft piece of wax. Place a bucket of water on the floor under the egg, in case the specimen should accidentally drop off. Focus the egg natural size and *sharp* on the ground-glass of your camera; this may be ascertained by a pair of calipers, comparing the actual length of the egg with its image upon the ground-glass. Insert your smallest diaphragm, and expose,—the time of exposure being governed by your former experiences. I prefer Seed's dry plates. They give excellent results. After developing, unless you get a *very* strong negative, it is *always* best to intensify your plate, and this is done by the usual mercury and ammonia process. Now if you wish an uncolored figure, to be lithographed, or woodcut, or for some of the special processes, you must print on the best ready sensitized *albumen* paper, toning the print *handsomely* afterwards. On the other hand if you desire a *colored* figure you must print on plain, *i. e.*, non-albumenized, sensitized paper, and afterwards color the print by hand with Newton's water-colors *from the specimen*. Pure white eggs stand out well when photographed against black velvet or crape; this also applies to some skulls and other osteological specimens, when they are cleaned to a state of glistening whiteness. Such a procedure defines the outlines well for the engraver.

When we come to the photographing of birds, *living* birds, for the purpose of obtaining the *proper kind* of figures that can be used for the various methods of reproduction now in vogue, we enter upon a field where one can display no end of patience, tact and ingenuity. It will be a long day before the writer will forget his experience in obtaining a photograph of a live Screech Owl. Three times I walked half a mile from the house where I could get a *sky background* for him on the summit of a hill, where an old natural stump was also to be found to serve as a perch for him. Just as good a result can be obtained by photographing your bird in your studio with a *sheet* for a background, and then you may choose any kind of perch you desire, from a museum T, to the limb of a rugged old pine with the cones and spines on. Right here, however, I desire to mention a process, no doubt already known to many, for which there is no end of use. Say you have obtained a fine, *intensified* negative, the subject being a bird caught in the act of some habit peculiar to it. You wish to obtain a good, strong, *accurate* outline figure of it, from which an *electrotype* can at once be made, to serve as an illustration for some article upon which you may be engaged. Make a print from the plate upon plain, non-albumenized, sensitized paper. Remove the print to the dark-room and wash out the silver from it thoroughly. You may tone, but it is not absolutely necessary unless there is very considerable detail in your figure. Dry the print in the dark, and keep in a perfectly dark place until evening. When evening comes complete your work under a

good lamp where the direct rays do not fall upon your print. Pin this latter out on a small drawing-board with artists' thumb-tacks, and then with a mapping-pen (No. 291, Gillott's) and Higgins' American Drawing Ink, carefully ink over by lines and otherwise the outlines of your figure. In doing this you will have the opportunity of making it appear *just* as you desire your outline ink sketch to appear when it comes to be finally printed from the electrotype. Having carefully completed your work, immerse the print *flat* in a tray containing a saturated solution of bichloride of mercury. This in a moment takes out *all* of the print except the ink outline you have traced, and this latter it leaves upon a pure *white* sheet of paper. Next dry the print thoroughly, and mount upon a suitable card. At a small cost, a good electrotype can be made from this figure. Photographing against a sheet, of course, takes out a great deal that you do not want in your reproduced figure, but by the process just described you need not have a single point or line more than you want. It works admirably where we wish to *reduce* the subject to any required size; in osteological subjects and in dissections; in deformities of birds; and indeed in dozens upon dozens of other cases. To naturalists in general I would say that the process just described is absolutely invaluable; by its means ready and *accurate* sketches are made of characters of country; of all sorts of ethnological subjects, as pottery and native arts, sometimes so difficult to draw; of complicated skeletons; of living animals of all kinds, and thousands of other subjects too numerous for enumeration.

With some live birds the following plan will be found to work well: Suspend a shelf, at the proper height, from the wall of your studio, and in the *proper light*. This shelf, as usual, is to be entirely covered with white blotting paper, and upon its horizontal part is to be firmly fixed the limb, trunk, or rock, or turf upon which you desire your specimen to appear. Set up your camera and focus this perch sharply on your ground-glass; next put in your smallest diaphragm and attach your 'pneumatic shutter' ready for instant use. Gently take your living bird in your hand, smooth its feathers, caress it for a moment or two, then quietly place its head under its wing, and by beginning slowly soon rapidly whirl your specimen in a circle. This, as it were, 'puts it asleep,' but it will seize the perch with its feet, or rest quietly on rock or turf. Place it as near as possible in the position you desire, and stand ready for a semi-instantaneous picture. Be *perfectly* quiet. In a few moments your bird gradually comes to, rights himself, preens up a little, looks around, steadies himself into a natural attitude, finally looks himself, and then more or less animated. This is your chance, puff the snap on him!

Faithfully yours,

Takoma, D. C., Dec. 28, 1890.

R. W. SHUFELDT.

Work of the Delaware Valley Ornithological Club During 1890.

TO THE EDITORS OF THE AUK:—

Dear Sirs: In the July number of 'The Auk' was published an account of the formation and the objects of the Delaware Valley Ornithological Club, and as we have now completed a year's study of the birds in the vicinity of Philadelphia it may be of interest to give a brief summary of the results of our work.

We have had six observers regularly in the field during the migrations besides having more or less frequent reports from four others. Our stations of observation being clustered around Philadelphia, the extreme points not more than twelve miles apart, we found a study of the northward progress of the migrating birds, from point to point, out of the question, as the large waves affected all our stations in a single night, and in the case of stragglers the first records came from the stations farthest up the river quite as frequently as from those lower down.

In some cases it would seem as if the advance guard of a wave had halted just beyond our lower stations one night and had not reached the others till the next night.

The records also seem to indicate that the migrating host spreads out farther on the New Jersey side of the river than on the Pennsylvania side, or perhaps the birds sheer off to the east where the river bends northward at Philadelphia; at any rate the arrivals at Haddonfield, N. J., seem to average earlier than at points to the northwest of Philadelphia. Whether future investigations will bear out this theory remains to be seen.

Recognizing the fact that the common species furnish much the best basis for the study of migration, we have endeavored to get as full data concerning them as possible, taking the exact numbers seen day after day, each observer covering nearly the same section of country daily and using the glass much more than the gun in his identifications. The result was that we found the numbers of many species continuing to fluctuate with the waves of migration for some time after the species became common: thus showing that the date of the first arrival, 'bulk arrival,' and last date by no means completely describe the migration of a species.

During the year, 204 species have come under our observation. Of these 86 were recorded through June and July and were proved either by the experience of this year or of former years to be breeders within our district. According to Dr. Allen's lists (Bull. Mus. Comp. Zool., II, p. 387) twelve of these are characteristic of the Carolinian fauna, and four of the Alleghanian, while seventy are common to both, many being widely distributed during the breeding season.

During January and February fifty-five species came under our observation.

Some of the more interesting records of the year follow:

Uria lomvia.—One shot on the Delaware at Chester, Dec. 29.

Oceanodroma leucorhoa.—One shot at the mouth of Darby Creek, on the Schuylkill River, by Mr. Wm. V. Wiltbank, Dec. 18.

Chen hyperborea.—An immature specimen of this western species was shot at the mouth of Darby Creek, on the Delaware River, Dec. 18, by Mr. Wm. V. Wiltbank.

Hæmatopus palliatus.—One specimen shot on Chester Island in the Delaware, May 14.

Strix pratincola.—Found breeding at Tinicum by J. Harris Reed. The experience of collectors seems to show that it breeds here regularly.

Ceophlæus pileatus.—One shot at Collingdale, Delaware Co., Dec. 12, 1890, by C. A. Voelker.

Corvus corax sinuatus.—One shot in Delaware County near the river, Dec. 30; now in the possession of Mr. C. A. Voelker.

Spiza americana.—One bird, in immature plumage, obtained from a gunner who shot it with Reed Birds on Maurice River, N. J., Sept. 18; now in the collection of Wm. L. Baily.

Thryothorus bewicki.—One shot at Wynnewood, April 12, by Wm. L. Baily.

The club is now engaged in preparing a manuscript reference list of the birds occurring in New Jersey and eastern Pennsylvania south of the mountains. They will be glad to hear of any captures of scarce birds within this district and to furnish what information they can in return.

Academy of Natural Sciences, Philadelphia.

WITMER STONE.

NOTES AND NEWS.

COLONEL N. S. GOSS, one of the original members of the American Ornithologists' Union, died suddenly at Neosho Falls, Kansas, March 10, 1891, at the age of 65 years. Colonel Goss was born in Lancaster, N. H., June 8, 1826, and while still a lad moved with his father to Pewaukee, Wis. His education was such as could be gained at the district school and the local Academy. From childhood he had a deep love for birds, and throughout his life devoted all his leisure to their study, in his later years giving nearly his whole time and energy to ornithological pursuits. In 1857 he moved to Kansas, selecting a home where now stands the city of Neosho Falls, then an unsettled wilderness. He was thus one of the pioneers of the State, and at once took a leading part in the development of its resources. From his enterprise and public spirit he "has been rightly called 'the Father of Neosho Valley.'" In 1860 he was elected and commissioned major, and in 1863 lieutenant-colonel, of the Sixteenth Kansas Militia Cavalry, and saw considerable frontier service, for a time serving as scout for the United States troops stationed at Humboldt, Kans. Later he was register of the land office at Humboldt, resigning to become land attorney for the Missouri, Kansas, and Texas Railway, and

in 1866 was elected president of the Neosho Valley Railroad. Still later he was also land attorney for the Santa Fé Railroad.

In the prosecution of his ornithological work Colonel Goss has in recent years traveled widely, visiting Labrador, the Northwest Coast, Southern Florida, California, Texas, Mexico, various parts of Central America, and numerous points in the Rocky Mountain region. He formed a remarkably large and fine collection of mounted birds, mounting most of them himself in the field from fresh specimens. This collection he presented a few years ago to the State of Kansas, where, as the 'Goss Ornithological Collection' it forms one of the most complete and valuable collections of local ornithology in the country. His principal ornithological writings relate to the birds of his own State, and besides numerous minor papers comprise a 'Catalogue of the Birds of Kansas,' published in 1883, reissued in a much enlarged form, with numerous additions, in 1886, and his 'History of the Birds of Kansas,' issued but a few days before his death, and noticed at length in the present number of 'The Auk.' Little did we think when penning that review, scarcely a week since, that we should be so soon called upon to chronicle his sad death.

The estimation in which Colonel Goss was held in his own State is indicated by the following transcript from the Topeka 'State Journal' of March 10: "Colonel Goss was one of the most widely known men in Kansas. He came to Kansas in territorial days and was one of the pioneers who made Kansas a great State . . . To those who knew him best, he will be remembered especially for his rare social qualities, his kind-heartedness, his highmindedness, and his warm friendship. In every sense he was a man whom to know was to admire, respect and love. His character was without blemish and his integrity unimpeachable. He had not an enemy in the world, and few men ever had more friends." On the receipt of the news of his death at Topeka, both branches of the Legislature then in session, and the Executive Council of State at a special meeting, adopted resolutions setting forth his invaluable services and the irreparable loss his death had brought to the State. He was buried with distinguished honor from the Senate Chamber.

The members of the A. O. U. who have had the pleasure of a personal acquaintance with Colonel Goss will find an expression of their own regard for him in these testimonials of sincere and well merited tribute to his character. Since the organization of the A. O. U. Colonel Goss has never failed to attend its meetings, often at the cost of much personal inconvenience, aside from the journey of nearly three thousand miles such attendance entailed. At the last meeting when the place of the next Congress was under discussion, in which Colonel Goss took part, he said, in expressing his preference for some other place than the one chosen, "wherever it is held, Colonel Goss will be there if he is alive." This was a characteristic expression of the deep interest Colonel Goss has always manifested in every possible way in the welfare of the Union. At the last Congress he was elected a member of the Council, to fill the vacancy caused by the election of Mr. George N. Lawrence to Honorary member-

ship. His loss from our ranks will be deeply felt. His brother, Captain B. F. Goss, of Pewaukee, Wis., also a well-known ornithologist, and two sisters, survive him, his wife having been long dead.

AMONG new claimants to attention from ornithologists we note 'The Collectors' Monthly,' edited and published by Charles H. Prince, Danielsonville, Conn., a 4-page monthly, "devoted to Ornithology, Oölogy and Natural History," of which four numbers have come to hand. We notice as worthy of mention, a continued paper by W. W. Worthington entitled 'Notes on the Birds of Long Island, with brief Descriptions of the Species.'

'The Ornithologist and Botanist,' edited and published by Joseph E. Blain, at Binghamton, N. Y., is a large 8vo. monthly, of which Vol. I, No. 1, appeared Jan., 1891. It is neatly printed and contains matter of interest to both ornithologists and botanists.

'Nature's Realm,' published by the Harris Publishing Company, New York, is a popular monthly magazine of general natural history, with a share of its liberal space devoted to ornithology.

'The Kansas City Scientist,' formerly 'The Naturalist,' now changed in form, is an octavo 16-page monthly, published under the editorship of R. B. Trouslet, as the organ of the Kansas City Academy of Sciences. The number at hand contains much ornithological matter.

'The Humming Bird, a Monthly Scientific, Artistic, and Industrial Review,' is primarily the advertising medium of the publisher, Adolphe Boucard, of Boucard, Pottier & Co., 'Naturalists and Feather Merchants,' of London, and is published largely in defense of the feather trade and the destruction of birds for millinery purposes, which it openly advocates. It contains, however, occasional papers which may be regarded as ornithological, although strongly imbued with a commercial flavor, as 'Notes on the Genus *Pharomacrus* or Resplendent Trogons,' begun in the first (Jan. 1891) number and continued in the third number, and 'Notes on Rare Species of Humming Birds and Descriptions of Several Supposed New Species in Boucard's Museum,' by A. Boucard. The latter paper contains descriptions of seven 'new species,' and is marked "To be continued." The separations here made seem in most cases to have a very unsatisfactory basis.

The following literal transcript from page 10 of the January number will doubtless be of interest to the readers of 'The Auk': "Actually in Europe only, over 200,000 persons have found hounorable and lucrative occupation in the feather trade, and millions of pounds sterling are spent annually, either in the purchase of bird-skins, or in the payment of persons employed in this trade. I know of many firms who occupy hundreds of men and women in the manufacture of fancy feathers, ornaments and attires of all descriptions, feather hats, and in the mounting of birds. This year, in consequence of the move which took place against the wearing of mounted birds on hats and otherwise, a great

many of these unfortunate people have not found work, and are suffering greatly from it, and when we consider that we have had a winter unequalled before for its severity and length, you can imagine what harm has been done to these interesting people by raising a war cry against the wearing of bird skins, feathers, etc. No doubt it shows how good-hearted are the persons, who, for sympathy for the poor little birds, have agreed in not wearing any of them in future, . . . but as I said before, it is quite a mistake, and I feel much more interested in the well-being of *two hundred thousand of my fellow-creatures*, of whom I know many in particular, and which are deserving the greatest interest for their industry and probity, than for the birds, and I hope that this notice will not have been written in vain." Such a naïve combination of confession and appeal, from a leading wholesale dealer in bird-skins for millinery use, carries its own comment. No doubt the same philanthropic feelings, but evidently not the same frankness, are shared by dealers nearer home, who also have a trade journal, but who deny that improved sentiment in behalf of bird protection has had anything to do with the decline in the bird trade for millinery purposes.

WHILE Dr. Mearns would hereby return thanks to those who have so kindly responded to his call for Sparrow Hawks and Snipe (see Jan. No. of 'The Auk,' p. 123), he finds his investigation of the former cannot be satisfactorily completed on account of lack of material, unless he is further favored with the loan of specimens. The Sparrow Hawks promise interesting results, in case a sufficient number of specimens can be brought together. We trust this reminder will bring the desired additional material.

Mr. Frank M. Chapman proposes to study the relationships of the Bronzed, Purple, and Florida Grackles. He will be grateful for the loan of material illustrating this group and especially desires specimens of breeding birds taken on or near the confines of their habitat. Specimens may be sent to Mr. Chapman at the American Museum of Natural History, New York City.



2/3

EV. ITERSON, LITH.

KETTERLINUS, PHILADA.

OTOPHANES MCLEODII BREWSTER.
EARED WHIP-POOR-WILL.

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OBSERVATIONS ON THE BIRDS OF JAMAICA,
WEST INDIES.

I. NOTES ON THE HABITS OF THE YELLOW-BILLED TROPIC
BIRD (*Phaëthon flavirostris*).

BY W. E. D. SCOTT.

IN beginning a series of papers for this journal, recording the results of some observations carried on while in the Island of Jamaica, West Indies, during the past winter, I wish to publicly acknowledge my indebtedness and to express my thanks for the many courtesies extended to me by the following gentlemen: His Excellency Sir Henry A. Blake, K. C. M. G., Governor of the Island; the Hon. Neale Porter, Colonial Secretary, etc., etc.; the Hon. James Allwood, Under Colonial Secretary, etc., etc.; the Hon. Valentine G. Bell, C. E., Director of Public Works; the Hon. W. Bancroft Espeut, of Portland, and the Hon. W. Fawcett, B. Sc., F. L. S., Director of Public Gardens and Plantations. To Oscar Marescaux, Esq., of Kingston, and Robert B. Campbell, Esq., Superintendent of the Jamaica Railway, and particularly to Frederic Wesson, Esq., of New York City, I am under special obligation.

After some preliminary work carried on at Stony Hill, some nine miles north of Kingston, I was able to locate myself, about the 20th of December, 1890, on an estate known as Boston, in the parish of Portland, and belonging at this time to F. A. Jenoure, Esq., from whom I rented the house for the succeeding three months. Portland, named from the Duke of Portland, Governor of the Island from 1722-1726, is a parish at the north-east end of the island, extending from the seacoast to the summit of Blue Mountain range, the highest elevations of which are attained in this region. Boston is an old sugar estate of some eleven hundred acres in extent, comprising cultivated fruit land, pasture, and a large area of forest or woodland. It lies between Port Antonio, the principal town of the region, and Priestman's River, a hamlet at the mouth of the river of the same name, being nine miles from the former town and one mile from the latter. The extreme north-east point of the Island of Jamaica is just in front of the dwelling house of the estate.

There is little level land at this point even near the coast. The old house, remnant of the splendor of the 'sugar days,' stands back from the sea perhaps a quarter of a mile and at an elevation of about three hundred feet, so that the outlook on the sea is peculiarly fine. The hill on which the house is situated is abrupt in descent for nearly if not quite a hundred feet. Between the hill and the sea stretches a pasture of beautifully green grass, that is kept cropped to a short lawn-like turf by many sheep and cattle belonging to the place. On the far side of the field are many cocoanut palms, some thatch palms, and tall graceful bamboos. Passing through this growth one comes out on the edge of a low cliff, some forty feet in height, and at one's feet lies the Caribbean Sea.

Daily during the stay that was made at Boston looking over the panorama lying below and in front of the house, white Gull-like birds were to be seen passing now one way, now another, along the coast. In the distance they seemed very much like large Terns of some kind, and the people of the region were familiar with them under the name of 'Boobies.'

It was rarely calm enough to launch a boat through the surf during the early part of the time spent at Boston, and there were so many new and interesting problems presenting themselves in quick succession among the land birds, that weeks slipped by and

all that I knew about the white Gull-like birds that were present daily just a little way out at sea was what has been recorded in the preceding lines. I was talking about birds to some black men who were working at a new canoe, at a point about a mile from the house, where a break in the cliffs forms a little open bay (known as Big Bay), with a couple of hundred yards of hard sand beach where boats can be laid up and from which they could be launched when the surf is not too high. These men said that at a point just outside the bay and southwest of it half a mile was a cave where the 'Boobies' roosted and were almost always to be found.

After this again several weeks elapsed before the surf was subdued enough to be safely passed in a boat, but finally on the 25th of February, Mr. Dugmore, a friend who was with me, and to whom I am indebted for much aid in shooting specimens for me while on the island, went off at daylight to solve the question as to what the 'Boobies' were. He returned at about halfpast ten in the morning and I met him on the beach. There was a very considerable sea running that made the landing tedious, but the first bird my friend held up to me before the boat reached the shore, I recognized at once as the Yellow-billed Tropic Bird (*Phaethon flavirostris*).

I have since that time spent three days on the sea coasting along the north shore of Jamaica and have seen many of the birds in question both flying and alighted on the projections on the face of the cliffs. This trip was from March 17 to March 20 of the present year. During my stay at Boston we did not observe any kind of Gull or Tern and cruising as I have mentioned for quite a hundred miles along the shore not a Gull or Tern was noted, but the Yellow-billed Tropic Birds were constantly seen. This then is one of the homes of this species and a point where it is fairly abundant. The following records of the habits and breeding of the birds in question are based on notes made by myself and Mr. Dugmore.

During the months of December, January, February, and March, and presumably at other times of the year the species under consideration is quite common along the entire north side of the island, wherever the character of the shore affords the birds suitable shelter for resting by day or roosting at night. These cliffs are of white limestone and vary in height, seventy-

five feet in height from the sea level being probably the maximum. This limestone is of course quite porous and at many points on the island, north along the coast and inland, are noted caves and caverns of greater or less extent. Along the coast the constant beating of the surf has honey-combed this rather soft rock and the apertures vary from small, shallow indentations to holes of considerable size and depth and occasional caverns of very considerable magnitude, one of which I shall have occasion to describe presently in greater detail. Many of the smaller cavities have several openings, and it is in such places that the birds taken seem most attracted to rest and to roost. From my note book I copy the following accounts of three excursions made successively on February 25, 26, and 27 of the present year.

"Priestman's River, Jamaica, W. I., February 25, 1891.—During my stay at 'Boston' I have almost daily seen large white birds flying off shore at short distances, but having no good glass have been unable to identify them. Today Mr. Dugmore went after them and secured ten individuals. He says he saw no other kinds of 'Gulls'. Of ten birds taken eight were shot and two were taken from holes in the cliffs. The females indicate that the breeding season is near, they being about to lay, and it is probable that some have already laid."

"Same locality, February 26, 1891.—Mr. Dugmore went out today and again saw many Tropic Birds but no other kinds of 'Gulls'. Ten individuals were secured and as before two of these were taken alive from holes in the face of the rocks and eight were shot. All the birds examined yesterday and those examined today confirm me in my belief that they are actually breeding or about to breed. The two individuals taken yesterday alive from the holes in the cliffs, as well as those secured in a like manner today, are *all males*. These birds were taken about ten o'clock in the morning, and were probably resting. Many others were seen going in and out of the holes in inaccessible places. These holes are caused by erosion from the water dashing against the rock, and the cavities preferred seem to be those that are from two to five feet deep, not very high above ordinary high water mark, and such as have two or more openings.

"I learn from the natives that they are aware that these birds lay their eggs in these places and that they roost in such loca-

tions at night. The birds appear every morning just after the sun is up and are then to be seen in the greatest numbers. By ten o'clock they have either gone far out to sea to continue feeding or have retired to their roosting places in the cliffs. Their absence is noticeable from about the time in the morning indicated until just before sundown, when a few, not nearly so many as may be observed in the morning, are to be observed flying along outside of the cliffs. The native fishermen say that most of the birds return to their roosting places when it is almost too dark to see."

The following notes on coloration were made from twenty individuals in the flesh taken February 25 and 26, 1891.

"There is apparently no variation among the individuals I have examined that correlates with sex, and no external features by which the sex can be determined. But there is a very considerable difference in the length and color of the long central tail feathers that presumably correlates with the age of the individual. Frequently the webs of the long central tail feathers are pure dead white or nearly white and there is every gradation between this and deep intense salmon color. This salmon color in some individuals, presumably very adult ones, extends in the live bird to the feathers of the back and breast in a rather mottled manner. This color is evanescent, like the blush tint on some Gulls and Terns. The bills vary from light straw color to deep reddish orange, the straw-colored bills being lightest in those individuals which have the central tail feathers pure white. This phase of plumage is probably characteristic of birds of a year old and under two years old."

"Priestman's River, Jamaica, W. I., February 27, 1891.—Today Mr. Dugmore obtained fifteen individuals of *Phaethon flavirostris* and much additional information regarding the birds. Of these birds five were shot, eight were taken in a cave, which opened by a small mouth from the cliff, and two were secured in holes in the cliff as already recorded. The cave where the birds were found had a very small entrance, about large enough for a man to crawl into, in the face of the cliff. This was approachable only in the calmest weather, in a boat. The entrance led at once into a spacious chamber of irregular shape. Going directly back from the mouth the cavern was some sixty feet deep. It was at its widest point some seventy or eighty feet, and oval in

shape as a whole.' The bottom was covered with coarse sand and gravel, and boulders of varying size, evidently having fallen from above, were scattered thickly over this floor except at the extreme back of the cavern furthest from the sea. The height of the roof or ceiling, which was of an uneven rough surface, was about twenty-five feet, and many bats were hanging wherever the projections or inequalities afforded them opportunity. Toward the back of this chamber five birds were secured, each one sitting on a single egg. The place chosen for the nesting site, for this is all it can be termed, was in all these cases where two boulders on the gravelly floor lay close together, just leaving room on the ground for the birds to crawl between them. Two birds were obtained in like situations that had not laid, and may have been simply resting. The females were in every case the birds that were sitting on the eggs, and it was quite evident upon dissection that the single egg forms the complement in these cases. The birds taken from the holes in the cliff, and also those taken in this cave, were very tame, and were captured readily without attempting to escape. Later on the same day a bird was found with a single egg laid at the bottom of one of the holes in the face of the cliff."

The eggs thus secured, six in all, are before me. They vary very considerably both as to color and markings as well as in size. No. 1 is not unlike the darker examples of the eggs of the Fish Hawk (*Pandion haliaëtus carolinensis*) in color and shape, though rather smaller being 2.30×1.70 inches. This egg contained a chick almost ready to be hatched. The extreme in variation as far as color is concerned is No. 2, a fresh egg, having a very light ground color, profusely and evenly spotted all over with irregularly shaped dark purplish brown spots. It measures 2.12×1.50 inches.

No. 3 is of a lavender brown color, and its profuse, irregular markings, which are but little darker, are of a similar shade. It is 2.22 long and 1.52 in the smaller diameter, and contained an embryo about half developed.

No. 4 is much the shorter of the six before me, but does not differ much from the others in its smaller diameter. It measures 1.98×1.51 inches. Its ground color is light cream. At the larger end this is profusely spotted with fine markings of a dark purplish brown. At the more acute or pointed end these mark-

ings are quite as profuse but of a very much lighter shade than those of the larger end. And there is an area between the two extremes almost devoid of any markings. This makes a sort of light belt about the egg, rather more than three-quarters of an inch wide. This egg contained a chick almost ready to be hatched. The other two eggs, Nos. 5 and 6, are similar in general appearance to Nos. 1 and 3 respectively and measure (No. 5) 2.33×1.60 inches, (No. 6) 2.18×1.55 inches. They were both slightly incubated.

There was no attempt at nest building in any of the cases noted, the egg being laid directly on the coarse sand or gravel, or on the dirt that had accumulated in the bottom of the hole.

I have seen these birds all the way along the north shore of the island from a point known as Hector's River on the east to Lucea on the west, wherever the cliffs afforded them shelter. They act very much like the larger Terns, the movements of the wings and method of feeding being very similar. The stomachs of the birds examined contained fragments of a species of squid or small cuttlefish, about four or five inches in length, and this was apparently the favorite food, though small fish from two to four inches in length were found mixed with the food before mentioned in four individuals.

On the 15th of March, a day or two before I left Boston, a native secured for me from one of the breeding places in the cliff, a young bird which I should think was at least a week or ten days old. It is No. 11325 of my Register and is a female. It is covered with rather sparse, long white down, and the quills of the wings and tail just begin to show. A space in front of the eye and reaching to the bill is bare of feathers. This bare region extends below the eye to the gape, and thence narrowly back of and narrowly around the eye. The color of the bare skin in this region in the live young bird is dark dull brown. Iris brown. Feet black. Bill yellowish with last quarter of an inch on both mandibles brownish black.

In breeding the birds seem eminently gregarious and the colonies at different points often reach an aggregate of at least fifty pairs. At sea, far out of sight of land, the birds are much more solitary in their habits, single birds being frequently met with, and it has been rare in my experience to meet with more than four individuals together in such locations. It may interest the

readers of this paper to have quoted in connection with the present sketch, the experience of the late Philip Henry Gosse, Esq., published in March, 1847. On page 400 of 'The Birds of Jamaica,' the author speaks of the only Tropic Bird he was aware of under the head of *Phaëthon æthereus* Linn.—a single bird which he "presumes to have been an immature individual"; and says further: "It is mentioned to me as one of the constant frequenters of the Pedro Kays." This is the only individual from the mainland that came under the notice of this very careful observer, and it is the more curious, inasmuch as Mr. Gosse resided, while in Jamaica, on the sea coast. In speaking of his work, on page 70 of his 'Birds of Jamaica' he says, "Every day through the winter months, my almost undivided attention was given to birds; and . . . from August to April about thirteen hundred specimens of birds fell into my hands, more than one thousand of which were shot by myself and my servants." The Pedro Kays mentioned are four small islands, situated some forty to fifty miles southwest of Portland Point on the south coast of Jamaica. It seems hardly probable, that the Yellow-billed Tropic Bird could have been as common in Gosse's day as now, for so conspicuous a species as it is at present could hardly have escaped the observation of so keen a worker, aided as he was by friends in almost every part of the island, the parish of Portland being referred to many times in his work. In reviewing in the present series of papers the work that has been accomplished during the past winter, I shall have occasion from time to time to make further comparisons, for the very accurate records left by Mr. Gosse form a basis for such work, and elements have entered into the fauna of the Island that have greatly modified the avifauna as it existed a little more than fifty years ago.

YELLOW-BELLIED WOODPECKERS AND THEIR UNINVITED GUESTS.

BY FRANK BOLLES.

OF THE seven species of Woodpeckers which I have found in the region of Mt. Chocorua, New Hampshire, the Yellow-bellied

or Sapsucker is the most numerous. It may fairly be said to be abundant in that district. I base this statement upon my daily count of birds seen between April and the middle of October in the years 1889 and 1890. I frequently record seeing from seven to ten of these birds in a day. Their favorite haunts are mixed growths of young birch, larch, hemlock, maple and white ash bordering water or wet lands.

My attention has been drawn to the Yellow-bellied Woodpeckers on two accounts:—their quickness to observe and persistence in scolding my tame Owls when in the woods; and their destruction of certain forest trees.

Last summer I was led to spend a considerable time in close study of these Woodpeckers and their feeding habits by the peculiar relations which I noticed as seeming to exist between them and Hummingbirds. My observations were given point by my recollection of the difference of opinion among ornithologists regarding the diet of these Woodpeckers and their motive for tapping sap-yielding trees. I had heard it said that their sole reason for drawing the sap was to attract insects which they then fed upon. I had also heard that they ate the tender cambium layer which intervenes between the bark and inner wood of trees. I knew well that the birds were insect-eaters for I had often seen them fly into the air with the grace of a Tyrant Flycatcher or Cedarbird and capture insects on the wing.

On July 19, 1890 while watching a group of birds gathered in the woods around my tame Owl, Puffy, two Yellow-bellied Woodpeckers and a Hummingbird attracted my attention. The Woodpeckers were scolding the Owl, when the Hummingbird darted towards one of them, hummed before it, rushed at the other, and then seeing the Owl flew at him squeaking furiously. Then it flew back to the first Sapsucker and perched near it. On the 21st I returned to the spot and found near by a Sapsucker's 'orchard' of about a dozen canoe birches and red maples, most of which were dead, some decayed and fallen. The tree most recently tapped was a red maple about forty feet high and two feet through at the butt. The drills made by the Woodpeckers began eighteen feet from the ground and formed a girdle entirely around the trunk. This girdle contained over 800 punctures and was about three feet in height. In places the punctures or drills had run together causing the bark to gape and show dry wood within.

The upper holes alone yielded sap. From this I inferred that what the birds obtained was the elaborated sap descending from the leaves through the fibres of the inner bark. I tasted the sap and found it unmistakably sweet. The leaves on branches above the drills drooped, those below were in good condition. I watched the drills on this tree from 12.30 P.M. until 2, and from 4 until 6. I was concealed in the bushes to the northwest of the tree. During almost all of this period of three and a half hours one or more Woodpeckers were in the tree engaged at the drills. They were a male, female and two young birds. Four visits were paid by Hummingbirds in the time named. The visitors were driven away by the Woodpeckers. At 5.30 I shot one of the young birds in order to determine the number of individuals using the orchard. His absence was unnoticed by the survivors.

The next day, July 22, I watched from 9.30 A.M. until 1 P.M. The male, female and one young bird were present, the tree being seldom left by all at once. Ten visits were paid by Hummingbirds; in five cases the birds reached the drills, and hovering, drank sap from one or more of them. In the other cases, the Woodpeckers being present, the Hummers were driven away. The work of the Woodpeckers seemed to me, armed as I was with an excellent opera glass, and sitting not more than thirty feet from the drills, to be perfectly plain in character. During the morning the female drilled four or five new holes. They were above others in perpendicular series. They yielded sap freely. She was closely attended by the young one, who occasionally swallowed pieces of the soft bark or cambium layer taken from the bottom of the drills. The female also ate some of it. When not drilling or resting the female dipped sap from the holes near by. The male drilled no holes but dipped in those yielding sap. The dipping was done regularly and rather quickly, often two or three times in each hole. The sap glistened on the bill as it was withdrawn. I could sometimes see the tongue move. The bill was directed towards the lower, inner part of the drill, which, as I found by examination, was cut so as to hold the sap. I looked carefully again and again to try to find insects in the sap, but none were there although numbers crawled upon the bark. Occasionally the birds by a nervous motion of the head caught an insect. There was no doubt as to when they did this, either on the bark or in the air, for in swallowing an insect they always occupied an appreciable time in the process.

During the forenoon I nailed to the tree near the drills two tiny cups of birch bark. These I filled with maple syrup. The birds, although not disturbed by these cups, did not then drink from them. In the course of the morning I shot a Crow and two Blue Jays from where I sat, but the Sapsuckers, although greatly startled by the reports, returned quickly after their first fright.

The day following, July 23, I was on duty at the tree from 9 A.M. until 12.30 P.M. I lay on the ground concealed by the spreading branches of a beech tree; my watch hung from a twig before my eyes, while equipped with pencil and paper, I took notes of all that occurred from minute to minute throughout the day. My record runs as follows:—

- Wednesday, July 23, 9 A.M. Arrive, climb tree, fill cups, male Sapsucker comes, scolds, goes off. No insects in the sap.
- 9.08. Male returns, dips from six holes.
- 9.09. Goes out on dead limb.
- 9.11. Hummer takes sap from two holes. I could hear no humming. Male quiet.
- 9.15. Young Woodpecker comes.
- 9.17. Goes out on limb, having dipped 37 times in 9 holes. Male flies.
- 9.20. Young dips 39 times from 13 holes.
- 9.22. Goes out on limb.
- 9.26. Male comes, dips 15 times from 9 holes.
- 9.27. Male drills a new hole. Hummer comes and goes; gets nothing.
- 9.28. Young flies north.
- 9.30. Male catches insect on the wing, goes on limb. Catches another insect on wing.
- 9.32. Hear a Hummer. Male drums.
- 9.34. Male dips from four holes. Flies west.
- 9.44. Male returns, dips 9 times, 7 holes, goes on limb—drums, preens.
- 9.47. Hear drumming.
- 9.50. Female comes from north, they chatter. Male flies north.
- 9.51. Female dips, goes on further side of tree and drills.
- 9.52. Comes to cups, tastes syrup in one.
- 9.53. Flies away, east.
- 10.01. Male comes from north, dips 17 times, 12 holes.
- 10.03. Flies north. Hear a Hummer.
- 10.09. Female comes from east, dips in drills and then from cup No. 1, 4 times.
- 10.10. Flies east.
- 10.37. Female comes.
- 10.38. Male comes. Female dips 4 times in cup No. 1 and goes east.
- 10.39. Male dips in 5 holes, taps on bark, preens.
- 10.42. Goes out on limb, scratches and preens. Seems to have lice.

- 10.45. Young comes.
- 10.47. Male goes to another tree, undrilled and begins drilling. Young dips in 40 drills.
- 10.48. Hummer comes. Young drives it off.
- 10.50. Young stands on cups and dips in a few holes many times.
- 10.53. Still dipping from same holes.
- 10.57. Still dipping at intervals.
- 10.58. Male comes, nervous, drills.
- 10.59. Young tries to drill, four feet above drills.
- 11.02. Male and young both drilling.
- 11.06. Male dips, goes out on limb.
- 11.10. Young dips.
- 11.15. Male dips, goes back on limb, flies east.
- 11.16. Young dips from cup No. 3 and from new holes.
- 11.17. Young digging in old holes.
- 11.19. Young dips from holes and dips twice in cup No. 3.
- 11.20. Goes on limb.
- 11.22. Dips from holes just made by male.
- 11.25-11.30. Still dipping at intervals.
- 11.32. Male comes from east. Young goes.
- 11.33. Male drills.
- 11.35. Looks at cup. Goes out on limb.
- 11.37. Catches insect on wing, brings it to the tree, crowds it into hole, and eats it piece-meal.
- 11.38. Female comes. Goes direct to cup No. 1 and dips 4 times.
- 11.40. Female dips in new hole and drills one.
- 11.47. New hole done, after $6\frac{1}{2}$ minutes hard chiselling.
- 11.49. She catches insect on the wing, puts it in a hole and eats it.
- 11.50. Hear a Hummer.
- 11.52. Female drills.
- 11.55. Dips, goes on limb, wipes beak and preens.
- 12 noon. Female completes toilet, dips and flies away.
- 12.05-12.10 I examine tree. What appeared to be drilling new holes was mainly clearing dry wood from existing drills and running several drills into one large one. The drills are always lower at the back next the wood than at the front, thus forming cups for the sap to collect in. The holes begun by the young did not reach the cambium layer. I find no insects in sap or syrup.
- 12.23. Female comes from north, dips, pecks and preens.
- 12.27. On limb preening.
- 12.30. Still there. I go home for dinner.
- 2.30. Return. Young in tree. I climb, he flies. I place a flame-colored nasturtium above cup No. 1.
- 2.37. Female comes, dips in new holes.
- 2.38. Sees nasturtium—petrified by astonishment.
- 2.39. Hitches towards flower, and touches it three times, with her bill. Satisfied, dips.

- 2.40. Drills and later does nothing.
- 2.48. Catches an insect on the bark by a quick pecking motion. Goes on limb.
- 2.51. Young comes, dips. No notice of nasturtium.
- 2.53. Young goes on limb. Female comes in and drills.
- 2.54. Young comes in and walks over nasturtium.
- 2.55. Female drinks from both cups, bill glistens.
- 2.57. Both fly. Young seems color blind.
- 2.58. Male comes, dips, goes near flower, does not notice it at all.
- 3. Male preens, clinging to bark.
- 3.01. Female returns. Male dips. Both preen.
- 3.09. Male dips.
- 3.13. Male hops to nasturtium and touches it with bill three times. Looks at cup but dips in holes.
- 3.15. Nasturtium blows away.
- 3.19. Male dips. Female drinks 17 times from cup No. 1 and once from a drill.
- 3.22. Male sleepy, dips now and then. I peep, mew, whistle, hoot, bark and talk, but no sound makes the birds do more than move their heads.
- 3.28. Hummer comes; sees male and retreats.
- 3.29. Male dips.
- 3.30. Female flies east.
- 3.33. Male dips and goes on limb.
- 3.37. Male hangs wings and opens beak. Sits in sun.
- 3.42. Prens, comes in and dips, goes back.
- 3.47. Young comes, dips 30 times. Male goes on limb.
- 3.52. Hummers near, male comes in, very lively, dips.
- 3.56. Male drills. Young stays close to him.
- 3.58. Young goes on limb and hangs his wings down each side, so they show underneath the limb.
- 3.59. Male goes on limb.
- 4. Male comes in and tries to catch passing flies.
- 4.02. Young wakes and preens.
- 4.04. Male begins new hole.
- 4.05. Male goes on limb. Young dips.
- 4.07. Young drinks 4 times from cup No. 3.
- 4.08. Male dips. Young goes on limb.
- 4.10. Male goes out.
- 4.13. Male comes in and dips.
- 4.17. Young flies in, male goes out. Young dips 48 times from drills.
- 4.25. Both quiet.
- 4.27. Male comes in. Young dips.
- 4.30. Male drills new hole higher up.
- 4.35. Young flies east.
- 4.40. Young comes from east, dips, male dips.
- 4.50. Male and young dipping.

- 4.55. I squeak, Hummer flies in and alights.
- 4.59. Female has been gone 90 minutes.
- 5. Male motionless. Young in next tree.
- 5.06. Male dips and flies away on seeing me.
- 5.07. Young comes in and dips 16 times from cup No. 3.
- 5.13. After dipping in holes goes to cup and dips 5 times.
- 5.14. Female comes from south, young flies south.
- 5.15. Female touches cup 3, then goes to cup 1 and dips 13 times.
- 5.16. Goes out on limb.
- 5.20. She drills, and continues to drill a long time.
- 5.35. Hummer comes, alights, flies away.
- 5.36. Young comes and dips. Female goes.
- 5.38. Young dips 7 times in cup No. 3, then in several new holes.
- 5.41. Male comes.
- 5.44. Young dips in cup No. 3, 7 times, flies off.
- 5.46. Male rattles around over cups and bark, but thus far I have not seen him drink from cups.
- 5.49. Young returns, dips 3 times from cup 3. He always wipes his bill in a drill after drinking syrup.
- 5.55. Young dips again in cup 3 and flies south.
- 5.56. Male flies in and clings close to cup.
- 6. Hummer near.
- 6.02. Male dipping and preening.
- 6.08. Young comes from south.
- 6.12. Male and young dipping.
- 6.18. A Hermit Thrush alights on the limb from which the Woodpeckers always take flight. Young flies at him twice and drives him away and out of the tree.
- 6.30. Young still dipping; I go home.

On July 24 instead of going to 'Orchard No. 1' as I shall call that already described, I went first to another half a mile northeast of it, where, in August, 1889, I had seen Sapsuckers drilling a canoe birch, and Hummingbirds and a Downy Woodpecker apparently sharing in the profits of the tree.

I reached Orchard No. 2 at 6.45 A.M. The tree in use last year was nearly dead. Two neighboring birches showing scars of earlier years were quite dead. All stood on the crest of a kame. About three rods along the ridge to the eastward a red oak and two or three canoe birches were in use by the birds. Five Sapsuckers including a male, female and three young were frolicking and dipping. The male was somewhat rough with the young birds. I stayed until 7.30. Hummingbirds made thirteen visits in that time and were generally allowed to dip freely. A Black-and-white

Creeping Warbler was driven from the tree. A Red-eyed Vireo was not disturbed in the higher foliage. Three separate times while one Hummingbird was dipping another came. The effect was astonishing. Volleys of squeaks proceeded from both birds. They dropped directly downwards from the tree about twenty feet, and when close to the tops of bushes and brakes began to go backwards and forwards like a long pendulum, the trunk of the tree coming opposite the lowest point of their course, and the arc made by them measuring about forty feet. Their humming and squeaking were continuous. At the end of the performance only one bird was to be seen and he quietly perched in the tree. I think this oscillating flight was made five or six times in each of the three performances which I witnessed.

The following evening, July 25, I visited Orchard No. 2 again. One Sapsucker and two Hummingbirds were at work dipping between 7.20 and 8. P. M. The pendulum act was not performed. The Hummers were not disturbed by the Woodpeckers. They continued to dip until it was too dark for me to see them although I could hear their wings.

On the preceding morning after my visit to Orchard No. 2, I spent a short time at Orchard No. 1. I found the birch bark cups empty. I filled them and as I reached the ground the young Woodpecker came and began dipping from cup No. 3. He dipped ten times, then poked into two drills and flew away. The female came immediately after, dipped in a few drills, saw the fresh syrup, dipped ten times in cup No. 1, and flew away. That day and the 26th were rainy. On the 27th at 6.15 A. M. I saw a male Hummer working on evening primrose blossoms. He ignored other flowers. I reached Orchard No. 1 at 6.35. The young one was there. I filled cup No. 1, the others being torn or warped. A Hummer flew almost into my face while I was in the tree. About twenty new drills had been made since the 23d, all being higher up the trunk than previous ones. About two inches in height had been gained. I remained on the watch nearly nine hours, going away only for meals and a brief visit to Orchard No. 2. During the nine hours the male paid ten visits to the tree, the female four and the young one three. Forty-one visits were made by Hummingbirds, in several instances two were in the tree at once. The tree swarmed with insects, mainly large flies. One or more butterflies came. Early in the morning

I added brandy and sugar to the maple syrup in the cup. The Hummingbirds with one exception dipped only in the drills. In one case a Humming bird drank for sixty seconds (including a rest of ten seconds) from the cup. He then flew away. The young Sapsucker dipped only from the drills, the female dipped thirty times or more from the drills and twenty-five times from the cup. The male dipped fifty-four times from the drills and worked a little in deepening holes, drank sixty-six times from the cup and caught twenty insects some on the wing, some on the edge of the cup.

I noticed with surprise that the Hummingbirds in more than one instance took sap while clinging to the bark with their feet, their wings being at rest. I have been told by a careful observer that they cling to the trumpet flower in the same way while crowding themselves into its mouth to draw its sweets.

My notes refer again and again to the spiteful treatment of the Hummers at Orchard No. 1. On the other hand at Orchard No. 2 they say "Male and young one dipping. Hummer comes in and dips several times *between them* and they offer no objection."

In spite of the fact that one young bird had been shot from the family at Orchard No. 1 the tree was without Woodpeckers only about one hour out of the nine that I watched it on July 27.

On the 28th I arrived at Orchard No. 1. at 7.28 A. M. and watched it for two hours. On my arrival I filled one cup with brandy, sugar and syrup, and another, a new one, with pure brandy and a drop or two of the mixture on top. A Hummingbird's arrival at 7.30 brought the male Sapsucker from a neighboring tree. The Hummer was driven away. The Woodpecker dipped several times and then tried the pure brandy. He shook his beak and hitched away from the cup. Then he went out on the limb used as a regular point of departure and flew north, as my notes say: "pointing and flying as though for a long trip." At 8.13 a male Hummer drank forty seconds from the cup containing the brandy and syrup mixture. At 8.16 a female Hummer drank twenty seconds at the same cup. Both ignored the drills. At 8.42 a female Hummer while drinking was attacked again and again by the wasps and bees surrounding the tree and compelled to defend herself. At 9.05 the female Woodpecker arrived, dipped in a few holes and then went to the brandy cup. She drank

six times, then went out on the limb and presently began shaking her head violently, showering drops from her beak in every direction until she had thrown up what I estimated to be two teaspoonfuls of liquid. She flew away eastward but soon returned and remained until 9.30 when she flew north "as for a long trip."

I then hurried to Orchard No. 2 and remained there from 10.07 until 11.15. On some of the trees at this orchard a thick growth of small sucker branches was conspicuous just below the drills. I think it was caused by them. It served as a screen for the Sapsuckers. During this hour three Woodpeckers were at work dipping and occasionally catching some of the numerous insects of which the air was full. Seven visits were paid by Hummingbirds. One of the trees in use by the Woodpeckers, Hummers and insects was a red oak. The drills in it were very small and round. At 11.15 I went into a large swamp to the east of Orchards 1 and 2 in search of fresh evidence. After walking a quarter of a mile I paused and hooted like a Barred Owl. A young Sapsucker promptly appeared, and a moment later a Hummingbird, which alighted close to the Woodpecker. Seeing no Owl, the Hummingbird flew off towards the point from which the Sapsucker had come. I followed and found Orchard No. 3 consisting mainly of trees girdled long ago and now dead. The tree in use was a red maple. Its drills were about twenty-five feet from the ground. One bird was dipping; two more came soon after. After a brief stay I went home to dinner. Returning at 2.45 I stayed until 4.15. A Downy Woodpecker passed without going to the drills. At 3.35 I killed two young Woodpeckers with a single charge of dust shot. A few moments later a Hummingbird alighted in one of the dead maples. At 4.10 I was drawn away by the hooting of a Barred Owl and did not return to Orchard No. 3 until Aug. 7 when I found only one Sapsucker at work, a young one, which I shot. I do not think that I found the principal trees in this orchard.

I ended my observations of July 28 by a visit of twenty-five minutes at 'Orchard No. 4' which I had first seen three years before. It consisted of a large number of dead and a few living trees which stood on a delta formed by the Chocorua River at its point of union with Chocorua Lake. The part of the orchard in use was a birch from whose root rose four major trunks quickly subdividing into fifteen minor stems each rising to a height of

over thirty feet. All of these fifteen trunks were dead or dying. Only seven of them bore leaves. I reached this orchard at 6.25 P.M. and finding no birds in sight placed Puffy on a stump close to the drills which were only seven to nine feet from the ground. Instantly a Hummingbird appeared, buzzing and squeaking, and the next moment a female Sapsucker came into the tree scolding. I removed Puffy and soon after the Hummingbird began dipping, giving a squeak each time he dipped. At 6.50 the Hummer, again discovering Puffy, flew within ten inches of his eyes, buzzed indignantly and flew away.

On Aug. 5 from 3 to 4 P. M. no Sapsuckers came to Orchard No. 4 and only one Hummer. A high wind was blowing.

On August 7 I visited Orchard No. 1. About twenty new holes had been made since July 28 and great quantities of frothy sap were wasting. The sap was as sweet as though artificially sweetened. I saw one young Sapsucker and one Hummingbird; neither of them dipped. The Woodpecker caught several insects.

On Aug. 8 I reached Orchard No. 4 at 6 A. M. At 6.03 a Hummer came. At 6.06 a young Sapsucker came and began dipping. I had with me, instead of one of my Barred Owls, one of three young Screech Owls which Mr. Batchelder had confided to my care for the season. 'Scops' was placed in a conspicuous position in the heart of the orchard. The Sapsucker had scarcely begun dipping when he saw the Owl and raised the alarm. Over thirty birds came, including two Hummers. By 6.30 the noise subsided, and the Sapsucker, who had not left the tree at all, resumed his dipping. A male Hummer was also dipping at 6.31. At 6.42 the Sapsucker was dipping within seven feet of my head, and the Hummer was perched close by. At 6.47 the Hummer buzzed in Scops' face and then perched again. At 6.52 another Hummer came and both flew away, at 6.54 both came back, but went again. At 6.56 Scops, whose wing was clipped, jumped nearly six feet at the young Sapsucker, at whom he had been glaring for some time. The Woodpecker flew with a loud cry, scolded for a long time and then disappeared. I nailed a birch bark cup to one of the stems and while doing it a Hummer came and looked at me. Later, he came again, looked at the cup and dipped at drills close above it.

I spent from 10 A. M. until 12.34 at Orchard No. 2 for the

purpose of shooting all Sapsuckers seen there. I found last year's tree again in use and those in use July 24 and 25 temporarily abandoned. From 10 to 10.48 the Sapsuckers seen spent all their time catching insects on the wing, sometimes flying fifty feet for them. Hummingbirds were numerous, and, as I had noticed was the case with this orchard, were unmolested even when dipping within a foot of a Sapsucker. At 11.15 I fired while a Hummer and young Sapsucker were both dipping and and killed the Woodpecker.

At 11.47 I tried again and killed a Sapsucker and male Hummer with the same charge. At 12.12 a female Hummer came and dipped for forty seconds. At 12.27 I shot another young Sapsucker and at 12.34 a fourth. As I left the orchard a female Hummer was dipping.

On August 10 I spent from 5.30 P. M. until 6.30 at Orchard No. 4. A young Sapsucker and Hummer were in the drilled tree during the entire hour. Although I climbed into the tree to put maple syrup in the cup, the Woodpecker did not leave the branches. Neither bird took any syrup.

On Aug. 13 I reached Orchard No. 2 at 6.40 A. M. At 7.09 a Hummer buzzed in my face so near that I was startled and waved her off. At 7.15 a Hummer was dipping in a canoe birch near by. At 7.17 I fired at her but missed. She dipped again at 7.29. At 7.32 I fired again and failed. At 7.37 she was dipping again and then perched near by. She dipped again at 7.45 and 7.49 and I tried a third shot which was successful. At 7.58 a female hummer was dipping in the same spot. At 8.07 I left without having seen a Woodpecker but with the certainty that more than a single pair of Hummers used Orchard No. 2.

On Aug. 14 at 3 P. M. Hummingbirds were using Orchard No. 2 but the supply of sap was diminishing and no Woodpeckers were to be seen. I shot away a small limb which I noticed the the Humming birds perched upon, and a few moments later one returned and flew in zigzag lines near the spot, searching for the missing twig. The same or another bird repeated the search a few minutes later. At 4 P. M. I reached Orchard No. 1 which seemed deserted, nothing coming during an hour and a half. Great streams of frothy sap extended down the bark to the ground and formed a moist spot on the leaves and mould. The trees smelled sour and the lower sap tasted sour. I climbed to the

drills. The upper holes were blowing bubbles of sap, and a slow current was flowing from them, readily visible to the eye. Many kinds of insects were upon the trunk, including ants, common house flies, and hornets. One of the last named stung me without other provocation than my presence, and I descended rapidly from the tree. By a mark made on July 23 I was able to determine that in three weeks the drills in this red maple had been carried eight inches up its trunk.

On Sept. 5 I paid a final visit, for the season, to Orchard No. 1. There were no birds present between 2.30 and 3 p. m. But little sap was flowing. The tree looked in better condition than in July or August.

Great numbers of hornets were in control of the tree. A few butterflies hovered near, but were driven away by the quarrelsome hornets.

On May 1, 1891, I took advantage of a brief trip to Chocorua to visit Orchard No. 1. The Sapsuckers were there and had evidently been at work several days. The red maple, their principal tree, was covered with flowers above the belt of drills, and with newly opened leaves on its lower limbs. The female was dipping at a series of new drills which had been opened two feet above the old belt. Forty-three holes had been cut on the trunk and nearly as many more on several adjoining limbs. Sap was flowing from the upper holes only, and not in abundance. It was slightly sweet. The male came to the tree once during my stay of half an hour, but he spent most of his time on a poplar a few rods distant, where he was digging his family mansion. The poplar was a vigorous tree, about forty feet in height. The hole was on the southeast side of the trunk a little more than twenty feet from the ground. It seemed to be already four or five inches deep. The birds were noisy, especially so when the female went to inspect the male's digging, and when the male came for a moment to the drills. Only two Sapsuckers appeared, and no Hummingbirds were to be seen. There were practically no insects to be found near the drills.

During July and August, 1890, I shot in all eight Sapsuckers at the various orchards. I preserved their stomachs which were well filled with insects. Some of these stomachs were examined by Professor Hagen who wrote to me on Aug. 21st as follows:

"The Woodpecker has hashed his food so fine, that it is beyond

my power or knowledge to determine accurately the composition of this bug-hash."

Mr. Samuel H. Scudder was able to speak with more confidence of the stomachs which I sent to him. Under date of December 19 he said: "The insects in the different stomachs are in all cases almost exclusively composed of the harder chitinous parts of ants. In a cursory examination I find little else, though one or two beetles are represented and No. 4 must have swallowed an entire wasp of the largest size, his head and wings attesting thereto. If the birds were very different in habit, or presumably in food, a comparison of the kinds of ants might lead to the detection of some peculiarities. A number of species are represented."

It is worthy of note that the structure of the tongue of this species is somewhat unlike that of the tongues of other Woodpeckers. In form it is not adapted to use as a dart for securing insects and its fringed edges have suggested to biologists who were not observers of the bird's habits, that sap might, as in the cases of species with similar apparatus, form an important portion of its food. The following extract from a letter written to me by Mr. W. F. Ganong, Instructor in Botany at Harvard University, gives a clear history of the progress of sap in its ascent and descent.

"It is now thought by botanists that the elaborated sap from the leaves is transferred down the stem through the soft bast cells of the inner bark, just outside of the cambium layer. It hence passes to the medullary rays, where it is stored up to last over the winter in the form of starch chiefly. Some of it is stored also in the wood cells of the young wood—but none I believe in the ducts or fibres or main masses of the wood itself. In the latter there is a current of crude sap from the roots flowing up, but I do not think any botanist thinks that the elaborated sap flows down by the same path. Hence if the Woodpecker in July or August penetrates the *wood*, he would get only crude sap from the ordinary wood tissue, but he might get elaborated sap from the medullary rays or some of the smaller wood cells—much more of the former (*i.e.* unelaborated) than of the latter (*i.e.* elaborated), I should say. If he penetrates to the cambium only he would get elaborated sap (which is being transformed into tissue), and if he penetrated the soft inner bark only he certainly would

get elaborated sap flowing downward, and probably that only. If it is elaborated sap he wants, he would do much better to go no further than the inner bark and cambium. The medullary rays are so small in proportion to the size of a Woodpecker's bill and tongue that he would receive but poor wages for his labor in penetrating them. Of course in spring before the leaves are fully out, the sap is very rich as it flows up, both in starchy and albuminoid matters, and *then* it would be worth working for. But as late as July and August, the upward flowing sap, while it contains traces of these nutritious substances, must be very poor in them.

"I never thought of the question before, because I did not know that Woodpeckers bored for sap. I always supposed it was insects and their larvæ they were after."

Summary.—From these observations I draw the following conclusions: that the Yellow-bellied Woodpecker is in the habit for successive years of drilling the canoe birch, red maple, red oak, white ash and probably other trees for the purpose of taking from them the elaborated sap and in some cases parts of the cambium layer; that the birds consume the sap in large quantities for its own sake and not for insect matter which such sap may chance occasionally to contain; that the sap attracts many insects of various species a few of which form a considerable part of the food of this bird, but whose capture does not occupy its time to anything like the extent to which sap drinking occupies it; that different families of these Woodpeckers occupy different 'orchards,' such families consisting of a male, female and from one to four or five young birds; that the 'orchards' consist of several trees usually only a few rods apart and that these trees are regularly and constantly visited from sunrise until long after sunset, not only by the Woodpeckers themselves, but by numerous parasitical Hummingbirds which are sometimes unmolested, but probably quite as often repelled; that the forest trees attacked by them generally die, possibly in the second or third year of use; that the total damage done by them is too insignificant to justify their persecution in well-wooded regions.

A PRELIMINARY LIST OF THE BIRDS OF SAN JOSÉ, COSTA RICA.

BY GEORGE K. CHERRIE.

THE following list will contain the birds found in the immediate vicinity of the city, and principally only such as I have taken myself and are represented in my own collection or that of the Museo Nacional.

Doubtless many more birds will yet be recorded, especially among the migrants, and even among the resident birds, because at a very little greater distance from the city many varieties are found that are not given in the list. At the most, I think the area covered does not exceed a radius of two miles.

The city of San José is located at 9 degrees 56 minutes North Latitude, and 84 degrees 8 minutes West Longitude, at an altitude of about 1135 metres. On the north the city is bounded by the River Torres, and on the south by the River Maria Alguilar.

The seasons are well marked, the rainy season commencing in the latter part of May and lasting until the latter part of November.

About the city the country is rather level, and there is comparatively little timber or brush wood; this being found along the sides of the river. There is considerable open pasture-land, and the remainder of the ground is occupied almost exclusively by coffee plantations. Many of these coffee plantations have jocote, aguacote, anona, and other fruit trees planted here and there. These fruit trees are very productive of bird life, the absence or presence, the appearance and disappearance of many species depending on the supply of fruit.

Bird life generally is far more abundant during the rainy season than during the dry season. At the end of the latter season vegetation is parched and dry. There are no fruits and insect life is not abundant. The breeding season commences with the awakening into life of the insect world and the bursting forth into fruit and flower at the beginning of the rainy season. This is speaking generally, as I believe some few species may be found nesting every month in the year.

Perhaps the greatest number of varieties are found moulting during July, August and September, but, as in the case of nest-

ing, some are moulting at all times and at all seasons. The North American migrants are usually in good plumage, although young birds in immature plumage seem to predominate in point of numbers.

Quite a variety of the North American species that are tolerably common at the time of their arrival from the north, disappear from the vicinity of the city at the close of the rainy season, and at the time of their departure on their return journey north, are only found at lower altitudes where food of all kinds is more abundant.

Of the 162 species included in the San José fauna 89 are North American. Since the publication of my list of North American birds at San José, Costa Rica (Auk, Vol. VII, p. 331), I have added the following:— *Dendroica caerulea*, *Falco columbarius*, *Urubitinga anthracina*, *Myiodynastes luteiventris*.

The entire fauna is composed of 29 Nearctic species, 60 Neogean; 30 autochthonous (of the 39 autochthonous species, 4 are peculiar to Costa Rica), and 34 Neotropical.

The nomenclature and classification here followed is that of Zéledón's list of Costa Rican birds (Anales del Museo Nacional de Costa Rica, Vol. I, 1887).

The list contains some notes on habits and nidification, and also descriptions of the plumage of young birds.

1. *Catharus melpomene*. The Central American Thrush-Robin, known here under the native name of 'Inglicito,' little Englishman, is quite common about the city, but owing to its very shy and retiring disposition, it is known to many by its song only. The song is heard occasionally throughout the entire year, but at its best, and almost continuously during the months of February, March and April,—just before and at the beginning of the breeding season. To pour forth their melody they usually choose a seat at the side of and well toward the top of one of the thick hedge fences surrounding the fields. There, with head thrown well back and wings drooping they will trill for hours, if not disturbed, but at the first approach of danger the singer is gone,—down through the hedge and away on the other side, where in a short time he will be heard as joyously as ever.

After the nesting season has well begun they are less often seen and seldom heard. Often when collecting I have heard a slight rustling of leaves at my side, when if I stopped and stooped down and examined closely the hedge row, I would probably see an 'Inglicito' perched within a few inches of the ground, sitting perfectly quiet watching me, or it would flit quietly and quickly from that point out of sight, all the time keeping well concealed from view.

They feed I believe entirely on the ground, scratching among the dead leaves for beetles, grubs, etc.

Nesting commences the latter part of April and lasts until the latter part of July, and even as late as August 20 I noted one feeding a young Cowbird (*Calothrus robustus*), — the Cowbird apparently full grown and considerably larger than its foster mother.

I have only had opportunity to examine two nests and sets of eggs, although from the fact that I have secured many young birds just from the nest I am sure they breed quite abundantly. Both sets of eggs were taken April 28, 1889. The first (No. 553, Geo. K. Cherrie Collection) was placed about six feet from the ground, in a coffee tree that stood some 18 feet from the river bank. It was constructed of green moss, evidently taken from some very damp place, a few large twigs, decaying half rotten leaves from the river bottom, and a little soft dry grass. It was lined with rootlets. The nest although not well concealed by leaves was not readily noticeable owing to the green moss used in the construction.

The nest contained two eggs, but one was unfortunately broken. The remaining egg is slightly glossy, pea green in color, speckled all over, very densely at the larger end, with cinnamon. It measured $.92 \times .67$.

The second nest (No. 544, Geo. K. Cherrie Collection) was situated in low bushes on the river bank, about three feet from the ground, admirably hidden by leaves. It is hardly as large as No. 553; there are fewer rotten leaves, less green moss, and more soft dry grass used in the construction. It has the same sort of lining of rootlets.

The eggs, two in number, are ovate in form, ground color pea-green, thickly speckled with spots varying from pale cinnamon to Prout's brown. The eggs measure $.92 \times .68$, and $.92 \times .68$.

The female while sitting on the eggs will allow no one to approach very near before leaving the nest, finally slipping off into the brush and out of sight without uttering a note.

In the 'Biologia Centrali-Americana' the eggs are stated to be "white thickly marked with rufous red,"—decidedly different from the eggs I have taken.

Below I will give a description of two young birds brought to the Museum, July 30, 1890, birds evidently just about ready to leave the nest. I endeavored to keep the birds alive but they died the next morning. They may be described as follows: Above dusky dark brown, darkest on the head, where there are no markings, and lightest on the rump where there is a decided cinnamon shading; feathers of back and scapulars with apical, tawny olive shaft streaks; middle and lesser wing-coverts marked the same way, but terminal spots larger; primaries dusky faintly edged with raw umber. Greater coverts and secondaries broadly margined on outer webs with a light mars-brown. Below, throat and upper breast spotted, the tips of the feathers all being dusky, then crossed by a broad buffy whitish band, the bases of all the feathers dusky; sides similar but darker; belly soiled buffy whitish; under-tail coverts ochraceous (at this age

reaching to the end of the tail). Eye dark, bill black, yellowish at the rictus only; legs and feet yellowish; front of tarsus and tops of the toes shaded with dusky.

2. *Turdus fuscescens*.

3. *Turdus ustulatus swainsonii*.—No notes have been added on these two species since the publication of the author's list of North American birds at San José. (See Auk, VII, p. .)

4. *Merula grayi*.—Gray's Thrush, or the 'Yigüirro' of the Costa Ricans, is one of the most abundant resident birds about the city. It breeds abundantly, the nesting season commencing about April 1, and lasting until nearly the middle of August. I have secured young birds from the nest as early as June 1. Two or three broods seem to be reared each season. Just previous to the beginning of and during the early weeks of the nesting season the Yigüirro is in full song. With the exception of this short period it has seemed to me to be rather a quiet bird, although gregarious in its habits. During the rainy season the chief food is the fruit of the species of wild figs (*Ficus*), and while they are frequently found in considerable numbers in these trees they are not noisy, and often my first intimation of their presence has been on hearing their sudden precipitous flight through the leaves and out of the tree. At such times they utter a sharp, rather disagreeable note.

A Mr. Echandia tells me that one he has in a cage frequently sings late at night, especially if disturbed or if the mosquitoes are very troublesome.

At all seasons Gray's Thrush is much sought after as a game bird, consequently they are decidedly shy.

The nest and eggs of this species vary considerably as will be shown by the description of three nests and sets of eggs in the author's collection. No. 1579, San José, June 24, 1890; three slightly incubated eggs. The eggs are a pale glaucous green, speckled and spotted all over with shades of brown between burnt umber and pale chestnut. On the larger end the ground color is almost entirely concealed. The larger spots are almost all irregular in form but present an approach to an ellipse. The eggs are ovate slightly elongated, and measure as follows:— $1.22 \times .80$; $1.20 \times .81$; and $1.20 \times .78$.

No. 1580, San José, July 1, 1890; two eggs and nest. The nest was placed in a small tree, about ten feet from the ground. It is composed outwardly of half rotten grass stems and leaves mixed with mud; the lining is rather coarse rootlets. Outside it measures 5.50 by 4.50 by 3 deep; inside 3.25 by 3.75 by 1.75 deep.

The eggs are rather under average size and one is much smaller than the other. The larger is ovate and the smaller short ovate. In the larger incubation had somewhat advanced while the smaller was perfectly fresh. The ground color is glaucous green; the markings consist of small dots of several shades of brown, pale chestnut predominating. The dots are aggregated mostly about the larger end, but the ground color is no where concealed.

No. 1581, San José, June 25, 1890; two eggs and nest. The nest was

about five feet from the ground, in a shrub growing by the river bank, and was constructed externally entirely of rootlets and dry grass stems, only a very little mud being mixed with them. The measurements taken from the nest are, 5.50 by 4, 2.50 deep outside. Inside 3.25 by 3.1.75 deep.

The two eggs measure $1.12 \times .82$ and $1.13 \times .83$. On the last the spots of brown are larger and more scattered, showing more of the pale glaucous green brown. On the first the spots are smaller and thicker, the ground color darker and about the larger end almost completely hidden.

5. *Thryophilus modestus*. — Of the two Wrens found in San José, the 'Chinchirigüi' is by far the most common and decidedly the noisiest, inhabiting the hedge rows where their noisy, suspicious chatter and restless motions are sure to attract the attention of the passer by, although a glimpse will be seen here and there of the bird. The song is loud, clear and piercing. The common name is derived from a supposed imitation of the notes of the song. It is pronounced *cheen-che-ree-gúe*, with a strong accent on the last syllable. These notes are repeated over and over very rapidly. There seems to be no particular time or place for singing; they are always ready.

The nesting season lasts from early April to late in August. I have taken young birds just from the nest by May 5, and as late as August 25. I have searched diligently for the nest of this species, but thus far have not succeeded in finding one.

Young birds just beginning to fly are intermediate in coloration between adult *T. zeledoni*, and *T. modestus*. Above, brownish slate like *zeledoni*, but having a shading of umber brown instead of olive. Below breast and belly white; sides, flanks and crissum ochraceous buff. In the adult bird the eye is chestnut; in the young, slate gray; feet and tarsi plumbeous. As the bird grows older, the ochraceous deepens and extends forward much further than in the adult bird, even encroaching on the sides of the breast; centre of the breast and belly ochraceous buff.

The parent birds and young remain in company until the young are fully grown. I have frequently come upon these family parties and secured them all. The two old birds will make a great noise and try in every way to attract attention. But the young crouch close to their perch and will scarcely stir even when one is within three or four feet of them, searching for them.

6. *Troglodytes intermedius*. — The Central American House Wren, or 'Zoterré' of the natives, while not nearly as common or as noisy as the last is better known, not being so shy, besides having a habit of nesting in small boxes prepared for them in the manner of the common House Wren *T. ædon*. Its habits in general are very like those of the House Wren, seeming, however, to prefer being close to the ground at all times. The song, however, is not apparently as strong as in that species.

Nesting begins in the latter part of January or early in February, as I have taken young birds fully grown by February 15, and birds just from the nest as late as June 23. While I have not taken any eggs myself I have noted the birds constructing their nests in deserted Woodpecker holes and

other convenient places, usually from three to eight feet from the ground. On June 16, 1889, I observed a pair carrying nesting material into the brain cavity of an ox skull. The skull was in the branches of a small tree about four feet from the ground, the Wren entered at the foramen magnum. At another time I observed a pair nesting in a hole in the ground in the bank of a small creek.

A nest and set of three eggs collected by Señor Don Anastasio Alfaro (No. 30, Museo Nacional, El Arroyo Allejuela, May 20 1889) was placed in the walls of that gentleman's house. The nest was constructed similarly to a nest of *T. aëdon*, there being first a great bulk of rather coarse dry twigs; inside of this a lining of soft grass stems and horse hair, finished with soft chicken feathers and three pieces of cast off snake skin. The eggs are short, ovate, pinkish white in color thickly speckled with bright chocolate brown, the speckling thickest near the larger end. The eggs measure $.65 \times .52$; $.65 \times .52$, and $.63 \times .52$. Señor Alfaro states that this bird was employed fifteen days in building the nest and depositing the three eggs. The bird was very confiding and would perch at the mouth of the nest and sing, while he (Alfaro) was standing within a yard of the nest.

A second nest and eggs taken by Señor Alfaro (No. 33, Museo Nacional, Tambor Alejuela, May 20, 1888) contained five eggs, one of which was broken. This nest, like the last, is lined with soft feathers and a few bits of cast off snake skin. Señor Alfaro assures me that he has examined many nests of this species and that all contain bits of snake skin,—rather a peculiar feature.

The eggs are pinkish white, thickly speckled with bright chocolate. In three of them the distribution of the spots is pretty uniform, while in the other they are aggregated in a band about the larger end, so as to conceal the ground color. They are short ovate and measure $.70 \times .54$; $.72 \times .53$; $.68 \times .53$, and $.69 \times .53$.

In a series of 22 examples of this species now before me, representing different ages and seasons, I find considerable variation in color.

Male (No. 37), above reddish brown (sepia), a little brighter on rump and upper tail-coverts, very obsoletely banded with darker. Wings and tail dusky, banded with black and the color of the back, the black bands being the narrower. Upper tail-coverts distinctly banded with black. Feathers of the rump with concealed subterminal black bands preceded by a white spot. An obscure line over the eye, lores, and a ring about the eye a brownish buff. Auriculars buff, edged with the color of the back, Below, throat and middle of the belly brownish buff; throat paler. Sides Isabella color; flanks darker, indistinctly barred with dusky; crissum and under tail-coverts buffish white barred with blackish.

Female (No. 3151), darker above than the male. The concealed subterminal black bands and white spots on the feathers of the rump are almost obsolete. The light bands on the wing are not nearly as dark as the back. Below similar to the male.

Young birds are much darker. A young male (No. 645, Geo. K. Cherrrie Collection) is dark bistre brown, wings and tail dusky blackish. The obsolete banding with black on the back is more apparent. The bands on

the upper tail-coverts are entirely obsolete and the brown bands on the wings are much paler than the color of the back. Wing-coverts distinctly banded with black. Concealed markings of rump feathers almost obsolete. Below slightly darker than adult with wavy lines across the throat, breast, and belly, produced by a very narrow terminal band to the feathers. Flanks and crissum dark Isabella color without bands. Female similar.

As the birds grow older the wavy lines below grow fainter. The crissum becomes lighter and is banded with dusky. The dark banding on the wing-coverts grows fainter while that on the upper tail-coverts becomes distinct.

No. 4577 and No. 4579 have the flanks very distinctly barred with dusky, the brown bands on the wings are much paler than the brown of the back, and are but little wider than the black bands. The wing-coverts are distinctly barred.

Below I present a table of measurements of the specimens in the collection of the Museo Nacional, together with four from my own private collection.

MEASUREMENTS OF *T. INTERMEDIUS*.

No. de Mus. Nac.	Collector's No.	Collector.	Locality.	When Collected.	Wing.	Tail.	Tail Feathers. Exposed	Culmen.	Bill from Nostril.	Tarsus.
2194		A. Alfaro,	San José,	Nov. 5, '87	2.00	1.69	1.41	.49	.37	.74
2461			Naranjo de Cartago,	June , '89	1.97	1.66	1.42	.47	.37	.72
2735		G. K. Cherrie,	San José,	Feb. 24, '89	1.98	1.65	1.40	.49	.37	.68
2736		"	"	Feb. 24, '89	1.95	1.52	1.28	.40	.30	.72
3070		A. Alfaro,	Alajuela,	July 8, '89	2.11	1.73	1.54	.50	.37	.71
3151		"	"	July 25, '89	2.03	1.73	1.48	.51	.40	.71
3152		"	"	July 22, '89	1.94	1.42	1.22	.52	.40	.70
3531		"	"	July 31, '89	1.68	.98	.68	.31	.24	.70
4575	542	C. F. Underwood,	San José,	Dec. 14, '89	1.87	1.62	1.34	.50	.38	.65
4576	534	"	"	Dec. 4, '89	2.00	1.55	1.33	.50	.40	.70
4577	576	"	"	Dec. 21, '89	2.13	1.74	1.50	.51	.41	.72
4578	1095	"	Juan Viñas,	May 4, '90	1.96	1.65	1.40	.41	.32	.68
4579	1092	"	"	May 4, '90	2.08	1.67	1.43	.50	.40	.70
4580	1094	"	"	May 4, '90	1.95	1.56	1.21	.50	.38	.69
4581	1084	"	"	May 3, '90	2.00	1.70	1.45	.48	.40	.72
4934		A. Alfaro,	Alajuela,	Oct. 3, '89	1.90	1.43	1.30	.50	.40	.68
4971		"	San José,	June 15, '90	2.00	1.73	1.47	.49	.38	.69
5188		G. K. Cherrie,	"	Sept. 10, '90	1.92	1.66	1.30	.49	.38	.72
	645	"	"	June 7, '89	1.92	1.45	1.20	.44	.32	.71
	668	"	"	June 23, '89	1.88	1.73	1.38	.43	.32	.70
	727	"	La Sabanilla,							
			Alajuela,	July 15, '89	1.92	1.62	1.41	.50	.40	.72
	762	"	San José,	Aug. 5, '89	1.94	1.65	1.35	.50	.39	.70

7. *Mniotilta varia*.—The first arrival this year was a young male on August 20, the same date as the first arrival in 1889; the second was noted September 3.

In a series of 25 Black-and-white Warblers before me, almost all are birds of the year. There is not one in fully adult plumage and many are decidedly buffy on crissum and sides.

8. *Protonotaria citrea*.—No fall migrants were noted.

9. *Helminthohila peregrina*. Recorded the first this fall, October 20. In a series of 15 Tennessee Warblers, taken from the beginning of September to the beginning of March, there is not one that is not more or less strongly tinged with greenish yellow, very different from the breeding bird found in the United States.

10. *Helminthophila chrysoptera*.—The first noted this year, a female, taken October 2, is a rather abnormal bird, being as brightly colored as any spring male. Birds taken here have usually more or less olive green shading on the back.

11. *Helmitherus vermivorus*.—November 23, 1890, I took a fine male specimen, the first and only Worm-eating Warbler I have taken in Costa Rica.

12. *Dendroica virens*.—The Black-throated Green Warbler may, I think, be considered as rather a rare bird in Costa Rica, there being only three Costa Rican examples in the Museo Nacional. These three, although the sex is not indicated on the labels, are evidently females, having the throat yellow and the black of the breast with whitish tips to the feathers. I have not myself met with this bird.

13. *Dendroica coronata*.—There are only two Yellow-rumped Warblers in the Museum collection. A male taken Feb. 15, 1889, is similar to an adult female from the vicinity of Washington, D. C., but has a triangular ashy blue patch with black streaks in the centre of the back. There are a few black feathers in the auriculars, and a few scattered in the sides of the crown. Below the yellow of the sides of the breast is very pale. The white throat is tinged with light buffy brownish. There are only a few black feathers in the breast (these are tipped with white), and a few with black shaft streaks.

14. *Dendroica blackburniæ*.—First arrivals were noted August 17, 1890, and the second August 20, from which time they were common until the first of October, when they were very abundant and remained so until the 7th, when all disappeared. The first arrivals were nearly a month earlier than in the fall of 1889.

In a series of 50 Blackburnian Warblers taken chiefly in the vicinity of San José there is not one in adult plumage. Perhaps the brightest bird in the collection is a female, taken by the author October 3, 1890, with throat and breast rich cadmium orange, but the white wing-patch is replaced by the two wing-bars of the young bird, and there is considerable grayish brown in the upper plumage. While there are a few males and females like the one described above, the bulk are very much paler, ranging from the bright cadmium orange to a pale yellowish buff on the throat and the breast, with the crown patch almost obsolete, the back and streaks on the sides dusky brownish.

15. *Dendroica pennsylvanica*.—In a series of 40 Chestnut-sided War-

blers now before me, 11 show the chestnut stripe on the sides; in 6 of these, however, it is only faintly indicated. One of the 40 has the yellow crown of the adult; all have the wing-bands strongly tinged with sulphur yellow, and almost all are bright olive green above.

The first arrival for the fall of 1890 was September 21.

16. *Dendroica æstiva*.—I have before me 32 males and 15 female Yellow Warblers, including specimens from both the Atlantic and Pacific sides of the country, but the majority are from the vicinity of San José. I believe all are true *æstiva*, although the difference between birds from the extremes of the series is very great. Eight of the 32 males have the chest and sides more or less streaked with chestnut. From a bird thickly marked with rather broad reddish chestnut streaks there is a gradual variation, the streaks becoming fewer, narrower, and lighter until just discernible. The yellow of the under parts also grows appreciably paler; only 4 of the 18 show faint chestnut streaking on the back. Above yellowish olive green; some of those that are brighter colored below have the crown more or less ochraceous orange, but this color gradually darkens into the yellowish olive green of the back. In the remaining 14 males, those in which the chestnut streaks are almost entirely obsolete, the yellow of the underparts grows fainter and varies from gamboge yellow to clear straw yellow. Above there is no sign of streaks and the yellowish color gradually disappears giving place to dusky grayish, until the last which I would describe as dusky grayish olive green.

The 15 female examples show the same variations as noted in the males, only the brightest female is not as bright as the brightest male, and at the other end of the series they are duller above and somewhat paler below.

The first arrivals the present year were noted August 24.

(To be continued.)

THE SCOTERS (*OIDEMIA AMERICANA*, *O. DEGLANDI* AND *O. PERSPICILLATA*) IN NEW ENGLAND.

BY GEORGE H. MACKAY.

My experience on the coast of New England has shown that observations covering a series of years are necessary in order to arrive at any important conclusions respecting the habits and movements of the water birds during their passage along this

coast, as the amount of information collected each year is small and the observations of different years often contradictory, owing to the varying conditions of the weather which govern in a large measure the movements of these birds during migration. In order to obtain a knowledge of the waterfowl, investigation must be prosecuted during the colder months, when inclement weather is likely to prevail; besides one must be a good boatman; hence the conditions for the observations as a rule are not so favorable nor so agreeable as the prosecution of similar investigations respecting land birds.

It is for these reasons that I venture to present in the following pages the results of such observations as I have been able to make, concerning the habits, feeding grounds, and migration of the three species (known under the common name of Coot) designated in the above title, with the hope that they may prove of interest.

These Scoters are the most numerous of all the sea fowl which frequent the New England coast, collecting in greater or less numbers wherever their favorite food can be procured, — the black mussel (*Modiola modiolus*), small sea clams (*Spisula solidissima*), scallops (*Pecten concentricus*), and short razor-shells (*Siliqua costata*), about an inch to an inch and a half long, which they obtain by diving. As an indication of how large a scallop these Ducks can swallow, I may mention one taken from the throat of an adult male White-winged Scoter, which was about the size of a silver dollar; it cut the skin of the neck when the bird struck the beach after being shot. Mussels measuring two and half inches by one inch have been taken from them; but usually they select sea clams and scallops varying in size from a five cent nickel piece to a quarter of a dollar. They can feed in about forty feet of water, but prefer less than half of that depth. As these mussels are frequently difficult to detach, and the sea clam lives imbedded endwise in sand at the bottom with only about half an inch above the sand, the birds are not always successful in obtaining them, it requiring considerable effort on their part to pull the mussels off, or to drag out the clams. Eight or ten of these constitute a meal, but the number varies according to the size. I have heard of a mussel closing on a Scoter's tongue, which was nearly severed at the time the bird was shot (Muskeget Island, about 1854). The fisherman frequently discovers beds of shell fish (scallops) by noticing where these birds con-

gregate to feed. In the shoal waters adjacent to Cape Cod, Nantucket, and Marthas Vineyard, these mollusks are particularly abundant, and consequently we find more of the Scoters in those localities than on any other part of the coast or perhaps than on all the rest of the coast combined. The birds living north of Chatham, Cape Cod, are found in widely scattered groups. Among the places frequented by the larger bodies further south are Point Kill Pond Bar, three miles off Dennis; the flats off Chatham, Mass. (twelve feet of water, and sea clams); Cape Cod, Mass.; Nantucket Shoals; Horse Shoe Shoal; Muskeget Channel; Vineyard Sound off Gay Head; and the whole north shore of Nantucket Island, about two or three miles out from the island. Most of these places being inaccessible to ordinary sportsmen, the birds can live undisturbed during the late autumn, winter, and spring months; undoubtedly returning year after year to these same waters, which appear to have become their winter home.

Where there are large ponds adjacent to the coast, separated from the ocean by a strip of beach, all three of the Scoters will at times frequent them to feed, and will collect in considerable numbers if the supply of food is abundant; in which case they are very unwilling to leave such ponds, and, although much harassed by being shot at and driven out, continue to return until many are killed. An instance of this kind occurred the first of November, 1890, when some four hundred Scoters collected in the Hummuck Pond on Nantucket Island; they were composed entirely of the *young* of the Surf and White-winged Scoters, only one American (a female) being obtained out of about fifty birds shot in one day (Nov. 3) by a friend and myself. I shot three American Scoters on Nov. 2 in the same pond.

As early as the 10th of August White-winged Scoters begin to arrive on this coast from the North, a good many of which have their breast feathers thin and worn off. The young White-wings do not arrive much before the 8th to the 14th of October. A few of the *old* American Scoters appear early in September, a large movement usually taking place from the 17th to the 25th of September; a few of the young birds arrive about the eighth of October. The old birds of the Surf Scoter appear about the middle of September, with a very large movement about the 20th, accor-

ding to the weather, the young birds making their appearance the last of September or first of October. I have known a considerable flight to occur on the last day of September, the wind all day being very fresh from the southwest, which deflected them in towards the land; such an early movement is, however, unusual. An easterly storm about the middle of August is likely to bring them along, the wind from this direction being particularly favorable for migration; if, on the other hand, the weather is mild and warm, it is not usual to see them so early.

From this time on they continue to pass along the coast until near the end of December, the main flight coming between the 8th and 20th of October, depending upon the weather, when the migration appears to be at an end. During such migration they are estimated to fly at a rate of about one hundred miles an hour, but this rate is also governed by the weather. The greater part of these Scoters pass around Cape Cod, as I have never heard of, nor seen, any of the immense bodies of 'bedded' fowl north or east of it as occur south and west of the Cape; probably because they are unable to find either the security or profusion of food north of it, that they can obtain in the waters to the south. They therefore congregate here in large numbers. On March 18, 1875, I saw on a return shooting trip from the island of Muskeget to Nantucket a body of Scoters, comprising the three varieties, which my three companions and myself estimated to contain twenty five thousand birds.

In these shallow waters the tide runs rapidly over the shoal ground and sweeps the Scoters away from where they wish to feed, thus necessitating their flying back again to it; consequently there is at such times a continual movement among them as they are feeding. When wounded and closely pursued, they will frequently dive to the bottom (always using their wings as well as feet at such times in swimming under water) and retain hold of the rock-weed with the bill until drowned, preferring thus to die than to come to the surface to be captured. As an instance of this, I may mention that on one occasion I shot a Scoter when the water was so still that there was not even a ripple on its surface; after pursuing the bird for some time I drove it near the shore, when it dove and did not reappear. I knew it must have gone to the bottom, as I had seen the same thing repeatedly before. As the occasion was a favorable one for investigation, the water being

clear and not more than twelve or fifteen feet in depth, I rowed along carefully, looking continually into the water near the spot where the bird was last seen. My search was at last successful, for on getting directly over where the bird was I could look down and distinctly see it holding on to the rockweed at the bottom with its bill. After observing it for a time I took one of my oars, and aiming it at the bird sent it down. I soon dislodged it, still alive, and captured it. I have often seen these birds, when wounded and hard pressed, dive where the water was forty to fifty feet deep, and not come to the surface again. I therefore feel much confidence in stating that it is no uncommon occurrence for them under such circumstances to prefer death by drowning to capture. This they accomplish by seizing hold of the rockweed at the bottom, holding on even after life has become extinct. I have also seen all three species when wounded dive from the air, entering the water without any splash. All are expert divers, it requiring considerable experience to retrieve them when wounded.

I have noticed during the spring migration northward in April that frequently the larger flocks of the Surf Scoter are led by an old drake. That the selection of such a leader is a wise precaution has frequently been brought to my notice, for on first perceiving such a flock coming towards me in the distance, they would be flying close to the water; as they neared the line of boats, although still a considerable distance away, the old drake would become suspicious and commence to rise higher and higher, the flock following him, until the line of boats is passed, when the flock again descends to the water. When over the boats shots are frequently fired up at them, but so well has the distance been calculated that it is seldom a bird is shot from the flock.

While each species, during spring migration, prefers to keep separate from the others, I have at times noticed flocks which had a few stragglers of the other kinds mixed with them, and have seen stray birds join flocks not of their own kind. They, however, soon appeared ill at ease, frequently leaving the flock before passing from view.

All three varieties when flying directly overhead at an elevation of about one hundred and thirty yards, can be called or whistled (by blowing through the fingers placed in the mouth) down to within ten or fifteen yards of the water, though *never* into it; but it requires one whose eyes and hands work in most perfect accord

to catch them with a charge of shot during such a headlong, zig-zag rush. I explain this action on their part by the supposition that at first they mistake the sound for the noise of a hawk's wings and seek the water for safety. I have seen the same result produced by a rifle ball passing through or near a flock flying high in the air. Either of the Scoters, when at considerable distance, can be attracted towards the decoys by shaking a jacket or hat at intervals, which, when their attention has been secured, should be stopped; for once their eyes have become fixed on the decoys, they will usually come to them, if flying low down near to the water.

My experience shows that all the Scoters are unusually silent, and seem to depend entirely on their sight, in discovering their companions. The American Scoter makes a musical whistle of one prolonged note, and it can frequently be called to the decoys by imitating the note. I have rarely heard the Surf Scoter make any sound, and then only a low guttural croak, like the clucking of a hen; they are said to utter also a low whistle. The White-winged Scoter, so far as I know, is perfectly silent, although I have heard that they make a low quack, like the note of the Blue-winged Teal; yet they can be called to the decoys in the spring by making a loud purring sound, like the call of the Brant.

In the spring mating begins before the northward migration commences, as I have taken eggs from females, between the 15th and 25th of April, which varied in size from a cherry stone to a robin's egg. During this period the duck when flying is always closely followed by the drake, and wherever she goes, he follows; if she is shot, he continues to return to the spot until also killed. I have often on firing at a flock shot out a female; the moment she commences to fall, she is followed by her mate; he remains with her, or flies off a short distance only to return again and again until killed, regardless of previous shots fired at him. I have never seen any such devotion on the part of the female; she always uses the utmost speed in flying away from the spot, and never returns to it.

In regard to the abundance of each kind of Scoter, it is difficult to judge, but I lean to the opinion that the Surf Scoter is the most numerous; next, the White-winged, and lastly the American. I think there is little difference as to the numbers now, and formerly; but during the southern migration, unless it

is thick and stormy weather, they pass farther out from land than formerly, owing to their being shot at. When migrating they fly very much higher in calm than during windy weather, and if there is any difference in the elevation of their flights at such time, I should say the Surf Scoter flew the highest (with the exception of those White-winged Scoters which migrate *west* in May).

I do not think it is generally known, or has been before stated, though I have known the fact for twenty years, that a very large number of the *White-winged* Scoters which make their winter home in the waters adjacent to Cape Cod, Nantucket, and Muskeget Islands regularly make a migration in May to the *westward* as far as Noank, Connecticut, where I have ascertained they are found during the latter part of May. They fly in the evening and at night, very high up, in a due *northwest direction*, usually passing in moderate muggy weather, making a low guttural sound at intervals. As I cannot obtain any data of their occurring west of this point on Long Island Sound, I venture to suggest that they pass high up over the state of Connecticut during the *night* and reach their breeding grounds at the north by the Connecticut River and Lake Champlain or Hudson River routes. This movement is a peculiar one, inasmuch as it takes place about the middle of May, and after the greater portion of the migration of this group has passed by, as also in ignoring the coast route accepted by all the rest. My attention was first directed to this unusual movement during the spring of 1870, while shooting at West Island, off Seconnet Point, Rhode Island, and it has occurred regularly every year since that date, as was undoubtedly the case earlier. These birds are apparently all adults, and do not seem to heed the regular migration to the eastward of many of their own kind, which has no effect in hastening their departure for the north. When the time arrives for them to set out on their migration, and the meteorological conditions are favorable—for it must be clear at the westward—they always start late in the afternoon, from *three* to *five* o'clock, and continue the flight during the night, passing by Marthas Vineyard, Woods Holl, Seconnet Point, Point Judith, and Watch Hill, quite a number frequently going over the land near the coast, they being very erratic at such times in their movements. This flight lasts for from three to seven days, according to the state of the weather. I have never

heard of their starting before the 7th of May, which is unusually early; the customary time being from the 12th to the 15th, and the latest the 25th. They usually fly at a considerable altitude, say from two hundred to three hundred yards, fully two thirds of them being too high to shoot. They prefer to start during calm warm weather, with light southerly, southeasterly, or easterly winds; though they will occasionally fly when the wind is strong. They never fly in the forenoon, but when once they have determined to migrate, they leave in large flocks, some of which number from five to six hundred birds, while as many as ten thousand have been estimated as passing in a single day. I have never heard of, or seen any similar flight to the *eastward* after this *western* flight has taken place. A few of the other two Scoters are seen with the White-wings during this western movement. No perceptible difference is noted in their numbers from year to year, and I have never heard of a year when such a flight as above described did *not* take place.

The cause of this late and unusual movement is undoubtedly the breaking up of the large bodies of White-winged Scoters which have been living all winter between Cape Cod and Muskeget and Marthas Vineyard Islands; and I feel moderately certain that these birds return year after year to their old haunts, it having become after so long an occupation as much their winter home as the one at the North has their summer home. They consequently prolong their stay until the last moment. As before stated, they are apparently all old birds, exceedingly large and heavy; they are so densely feathered, powerful, and tenacious of life, that at the long distances one has to shoot at them, the shot will not penetrate unless they are hit in the head or neck. To recover a wing-broken one, if otherwise uninjured, is most difficult, in which respect they stand on a parity with the Loons and Eiders.

Towards the latter part of May there is a movement of Surf and American Scoters to the eastward, the flight being up Buzzards Bay and crossing high up over the land to Cape Cod Bay. There is also a movement south, during the latter part of October, over Barnstable County near Centerville, Mass., from Cape Cod Bay to Vineyard Sound.

I am informed on very good authority that when the *western* migration of the White-winged Scoter is taking place in May,

many Surf Scoters pass *east* through Vineyard Sound, say three or four flocks of from fifty to seventy-five birds each during an hour. On their way north in April, the Surf and American Scoters usually make their appearance before the White-wings. The migration of the Scoters is so mixed that I have rarely separated the entries in my earlier notes (much to my regret now). I can therefore only give data in most instances of the combined migration. In order that some idea may be formed as to the time when these defined movements occur, I copy the following from my notes. My place of observation in the spring was Seconnet Point, Rhode Island; in the autumn at Straitsmouth Island, Cape Ann, Mass.

1862, Oct. 11. Large flight of Scoters going south.

1862, Oct. 12. Quite a movement going south.

1862, Oct. 14. An enormous flight of Scoters going south; wind east, blowing hard; shot a great many, lost some, but saved fifty and one Canada Goose.

1862, Oct. 15. A flight going south.

1865, Oct. 13. Large flight going south; blowing very hard from the south.

1866, Sept. 25. A small number going south; wind S. E. with fog and rain.

1866, Sept. 29. Quite a number of *old* Scoters flying south, far out from shore; weather very calm.

1866, Oct. 1. A small movement of *old* American and Surf Scoters going south; wind blowing hard before daylight, but moderated at that time.

1866, Oct. 2. Shot Blue-bill Widgeon in company with Scoters.

1866, Oct. 6. Some Scoters flying; wind N. W., cold.

1866, Oct. 9. Quite a flight of Scoters in the morning; blowing hard from the east.

1866, Oct. 10. A large flight going south with wind east, moderate; mostly White-wings; first flight of them seen this year. Birds flying high.

1866, Oct. 11. The Scoters all flying high again today, weather very moderate, wind southeast. Scarcely any birds after 10 A.M.

1867, Oct. 8. Considerable flight of White-wings going south; wind northwest in the morning; died away, and went around the compass to west about noon. Two Red-head Ducks (*Aythya americana*) shot today.

1869, April 25-26. Quite a movement to the eastward, mostly White-wings and Surf Scoters; also a few American Scoters.

1870, April 26. Large flight of the three varieties of Scoters eastward; the best day this spring; wind S. W., moderate, warm, fine weather.

1875, April 24-27. A flight towards the eastward, wind S. W., moderate.

1877, April 17. An *enormous* flight to the eastward; wind S. E., raining and blowing hard.

1878, April 10. First flight of Scoters to the eastward. April 14-16. Wind northwest in the morning, calm in the afternoon. A good many Scoters flew wide off shore. Wind fresh N. and N. W., later S. W. light. On the 16th wind N. E. light.

1878, April 17. A *great* many Scoters going east; wind light N. E. Birds all flew during morning, none in afternoon.

1878, April 19-20. A *great flight*, mostly Surf and American Scoters, wind S. W.—on the 20th wind light S. E. Birds all flying to the eastward—fine weather.

1878, April 30. Quite a movement, wind N. E. with rain.

1879, April 20-21. Previous week very stormy, with wind and *snow*, it cleared on the 20th and considerable many Scoters flew, a large share of which were from the eastward. No flight towards the east has as yet taken place; the season is over two weeks later than last year.

1879, April 22. Many Scoters; wind S. W. in the afternoon, gentle.

1879, April 24. Many Scoters flying westward, many more than to the eastward; wind N. W., light early. Scoters stopped flying at 9.30 A.M.

1879, April 25. A good many Scoters commenced flying at 11 A.M., wind S. E. and E. No birds moving in the morning, when it was calm.

1879, April 27. Quite a number of Scoters going east, commencing to fly at noon with the wind. It was N. E. early and calm. No defined flight up to the 29th.

1880, April 9. No movement of Scoters up to date.

1881, April 16. A good many Scoters flying east, clear and cool, wind west.

1881, April 16. No special movement this spring until today; weather of past ten days very cold and stormy, snowing on the afternoon of the 15th, wind northeast; season two weeks late.

1881, April 21. A good many Scoters flying east; wind west by south and southwest. It was foggy, early and calm, no birds; cleared later and Scoters commenced to move.

1881, April 22. A good many Scoters going east, wind N. E.; no defined flight this spring before today, which is only a moderate movement.

1884, April 11. First ten days of this month very stormy, with rain and some snow. Northerly and northwesterly winds most of the time. On the 11th wind came southwest at noon, and quite a number of Scoters flew to the east.

1884, April 12. A good many Scoters flying eastward up to 9.30 A.M.; wind light, northwest, almost calm. At 9.30 A.M. wind changed to S.W. fresh, and birds stopped flying on this change.

1884, April 13. Not so many Scoters flying as yesterday, but still quite a movement to the eastward; wind south, nearly calm,

1884, April 15. Quite a flight from the westward; wind S. E., increasing.

1884, April 16. The largest flight this spring up to date.

1884, April 24. A good many Scoters, weather calm.

" " 27. A good many Scoters.

" " 28. A great many Scoters, but flying far out from shore.

1884, April 29. A good many Scoters today; think about all the birds have passed.

1886, April 8. First movement of Scoters going east; this is the earliest movement I have ever known. Weather moderate, wind S. and S. W.

1886, April 11-12. Quite a flight to the eastward, wind S. and S. W. moderate, but no *large* movement up to the 20th. On 15th, saw three Purple Sandpipers, secured one.

1886, April 21. A large flight of Scoters, notwithstanding the wind is north.

1886, April 22. A large flight; wind S. W., and a little foggy. The Scoters flew very high.

1886, April 23. Quite a movement, wind west in the morning and pleasant, then came S. E.

1886, April 24. An enormous flight, wind south and pleasant, Scoters flying high.

1886, April 25. A large flight, wind N. W., pleasant, Scoters all flying very high.

1886, April 27. A small movement going west—wind west, pleasant.

" " 28. A larger movement going west; wind south and pleasant; the migration drawing to a close.

1887, April 10-11. Quite a number of Scoters flying to the east—the first this spring. Weather very warm.

1887, April 16. A good many Scoters, wind S. E.

1887, April 15. Quite a number of Scoters in the afternoon, wind S. E., moderate. None in morning, wind S. W.

1887, April 20. Some Scoters flying to the west in the morning, and in the opposite direction in the afternoon; these were *not* migrating birds, but 'traders' Wind light north—S. W. in P. M.

1887, April 21. A flight in the afternoon; none in the morning, wind light N. in the morning, N. W. and S. E. in the afternoon; Scoters flew high.

1887, April 22. A good many Scoters flying wide off shore and high; wind light S. W.

1888, April 14. A great many Scoters flying to the eastward in the afternoon, wind S. W., raining; in the morning, wind N. W. cold but few birds flying.

1888, April 15. Some Scoters going east, wind north and cold.

1888, April 6. A flight to the eastward; wind S. W., warm. This is the *earliest* flight I have ever heard of.

1889, April 20. An *enormous* flight to the eastward, birds flying high in the morning with calm weather, and flying lower in the afternoon after it breezed up; wind S. W., warm.

1889, April 21. Another *large* flight of Scoters to the eastward; wind

S. W., light and warm. Shot a full plumaged male Wood Duck from a flock of Surf Scoters, only *one* seen.

1890, April 17. A flight, mostly White-wings, going east; wind S. W., light in the morning, and fresh in the afternoon.

1890, April 21. Many Scoters flying high, wind W. early, and S. W. light at 7 A.M. Birds going east.

Some years no large flight takes place in the spring, the birds passing nearly all the time in small numbers, owing probably to peculiarities of the weather; but such years are very unusual.

JUNCO CAROLINENSIS SHOWN TO BE A SUBSPECIES.

BY JONATHAN DWIGHT, JR.

WHEN Mr. William Brewster in 1886 described a new Junco from the mountains of western North Carolina he considered it a subspecies of *J. hyemalis* and called it *Junco hyemalis carolinensis* (Auk, II, 1886, p. 248).

In the Supplement to the A. O. U. Check-List for 1889, this bird was accorded full specific rank. The reason for this never appeared; presumably it was on the ground that until two forms are proved to intergrade they are to be considered distinct species; and further, because no birds had been taken in the region intervening between the Catskill Mountains and North Carolina.

During the latter part of June, 1890, I visited the mountains of Pennsylvania expressly with a view to determining what sort of Juncos, if any, were found there, and, as I expected, obtained a series that clearly shows *carolinensis* to be only one end of a series that, beginning with typical *J. hyemalis* to the north, and extending southward along the Appalachian Mountain System, reaches its maximum differentiation at the southern end of these mountains.

I have compared my birds with breeding specimens from Nova Scotia and Quebec on the one hand, and from North Carolina and Tennessee on the other. On an average they most re-

semble northern examples, but several are quite typical of the southern form. A certain sootiness about some of them may be attributed to the fact that they were obtained in a region where coke ovens abound. The young and females are practically indistinguishable from the northern birds. The bills of fresh specimens were largely flesh-colored and vary considerably in size. Regarding five males I sent Mr. Brewster for comparison, he writes: "Nos. 2908, 2885 and 2886 are indistinguishable in color from breeding New England specimens (Mass. and N. H.), but they are larger and have larger bills. No. 2936 seems to be about intermediate between New England Juncos and *carolinensis*. No. 2887 is so very close to *carolinensis* that I cannot find any important differences. Taken as a whole your series indisputably furnishes the connecting links between the Junco that breeds in New England and his representative in Western North Carolina. This is precisely what we should expect, is it not?" "Of course," every one will say, and even Mr. Brewster himself in his original description of *carolinensis* writes: "Among a smaller number [of *hyemalis*] taken in early spring at Washington, D. C., however, are several with bills colored precisely as in the North Carolina birds. In other respects, however, these specimens are identical with *hyemalis* proper. It is probable that they represent the form which breeds in the mountains of Virginia and Pennsylvania and which naturally would be in varying degrees intermediate between extreme northern and southern types."

And yet in the face of such probabilities, after *carolinensis* has rested as a subspecies for several years and been written about by several observers who have met with it in Tennessee and Virginia as well as in North Carolina, it is suddenly raised to the rank of a full species. Now it looks as if it must be considered a subspecies again. The trouble seems to originate in the assumption that every newly described bird should stand as a species until proved a variety. Why not just as well expect every variety to stand as such until proved to be a species? The present instance would furnish, I think, an excellent text for a sermon upon the evils of nomenclature. I only wish, however, to call attention to it, for the case of *carolinensis* is but typical of others that have occurred and are still more likely to occur again. Although Mr. Brewster was quite right in the first place, the same cannot be

said of others who in their haste to get ahead of someone else, have burdened our books with endless synonymy, by describing from insufficient material. 'Would science lose much if time were taken by observers to gather suitable material before describing a bird on the chance of its being new? I do not say that this is entirely practicable, but I do say that when a man thinks that specimens proving doubtful relationships may be obtained in any given locality, he should at least endeavor to obtain them. If time or means fail, it is his misfortune, although the adage "Where there's a will there's a way," still has force.

A LIST OF BIRDS TAKEN AND OBSERVED IN
CUBA AND THE BAHAMA ISLANDS,
DURING MARCH AND APRIL, 1891.

BY CHARLES B. CORY.

DURING the past winter the writer visited Cuba and several of the Bahama Islands, and although nothing new was discovered in the way of birds or mammals, yet a list of the species noted is useful in studying the geographical distribution of insular forms, as well as being likely to add to our knowledge of the line of flight and season of migration of many of our North American species.

It is not intended to make this article more than a very condensed account of the route travelled and the different place visited, while giving a list of the species of birds observed and taken during the trip.

In a city like Havana, Cuba, the markets are always attractive from a naturalist's standpoint, as there one finds various kinds of birds, fish, and often mammals exposed for sale. Many birds are trapped and brought in alive, either in cages or tied together by their legs in bunches. Among the birds offered for sale in the Havana market we observed Cuban Quails (*Colinus cubanensis*), Doves (*Zenaida zenaida*), Cuban Meadow-larks (*Sturnella hippocrepis*), Orioles (*Icterus hypomelas*), and Guinea hens. There were also several cages of Blue-headed Quail Doves

(*Sturnanus cyanocephala*), the latter seeming to be common, as they were nearly always to be found in the markets.

In crossing the harbor to take the train for Cienfuegos, we saw a number of Brown Pelicans and Buzzards flying about the bay, mostly near the entrance of the harbor, in the vicinity of Moro Castle.

From Havana to Cienfuegos by rail is a ride of about eleven hours, and the country through which the road passes is pretty and fertile. To our good fortune, a heavy rain had fallen during the night, so that we were not troubled with dust, which is usually the great objection to this ride.

Much of the land along the road is cleared and cultivated, the fields broken here and there by clumps of royal palms and cocoanut trees, or by extensive plantations of sugar cane, with the picturesque houses of the planters, and the tall chimneys of the sugar works standing out clearly in the distance. Along the road Buzzards, Anis (*Crotophaga ani*), Cuban Meadow-larks and Sparrow Hawks were common. Numerous small birds were flitting about the hedges of cacti and pineapple plants, and once, while stopping at a station, two Finches (*Eutheia lepida*), came within a few feet of the car window, lighting on a banana tree, which grew so close to the track that its leaves touched the cars. At San Domingo, a station where the passengers for Cienfuegos changed cars, we observed a number of Swifts, *Cypselus phænicobius* (Gosse), flying about the houses, and a Ground Dove (*Columbigallina passerina*) flew from a field and lit for a moment near the platform. The market in Cienfuegos is not attractive, and very few birds are offered for sale there. The only species observed, during two visits, were the Oriole (*Icterus hypomelas*), a Finch (*Eutheia lepida*), and some Cuban Parrots. From Cienfuegos to Santiago de Cuba is a run of some thirty hours by steamer, much of the time in sight of land.

In Santiago de Cuba, with its wonderful river-like harbor and its quaint, many colored houses, we found a most interesting city, but very little in the way of birds to repay our getting up at day-break to explore its market. The only birds offered for sale were a few which had been trapped alive, and included Cuban Parrots, several Black Finches (*Melopyrrha nigra*), and a pair of Nonpareils. Near the entrance of the harbor a pair of Tropic Birds (*Phaëthon flavirostris*) were flying about or floating on the water.

While in Cuba I recorded the following species:—

<i>Phaëthon flavirostris</i> Brandt. ✓	<i>Ceryle alcyon</i> (Linn.).
<i>Ardea egretta</i> Gmel. ✓	<i>Cypselus phænicobius</i> (Gosse). ✓
<i>Colinus cubanensis</i> (Gould). ✓	<i>Sturnella hippocrepis</i> Wagl. ✓
<i>Columbigallina passerina</i> (Linn.). ✓	<i>Euethia lepida</i> Jacq. ✓
<i>Cathartes aura</i> (Linn.).	<i>Passerina ciris</i> (Linn.). ✓
<i>Catharista atrata</i> (Bartr.). †	<i>Progne dominicensis</i> (Gmel.). ✓
<i>Falco sparverioides</i> Vig. ✓	<i>Mimus polyglottus orpheus</i> (Linn.). ✓
<i>Crotophaga ani</i> Linn. ✓	

NEW PROVIDENCE, BAHAMAS.

From Cuba we went to Nassau, New Providence, Bahama Islands, and spent two weeks, collecting and studying the birds of that Island. Having visited Nassau a number of times, and knowing the ground well, we were able to do considerable work during the short time we were there.

The following species were collected between March 14 and April 2:—

<i>Podilymbus podiceps</i> (Linn.).	<i>Loxigilla violacea</i> (Linn.).
<i>Aythya affinis</i> (Eyton).	<i>Euethia bicolor</i> (Linn.).
<i>Ardea herodias</i> Linn.	<i>Spindalis zena</i> (Linn.).
<i>Rallus coryi</i> Maynard.*	<i>Callichelidon cyaneoviridis</i> Bryant.
<i>Gallinula galeata</i> (Licht.).	<i>Ampelis cedrorum</i> (Vieill.)
<i>Colinus virginianus</i> (Linn.).	<i>Vireo crassirostris</i> (Bryant).
<i>Columbigallina passerina</i> (Linn.).	<i>Cæreba bahamensis</i> (Reich.).
<i>Strix pratincta</i> (Bonap.).	<i>Mniotilta varia</i> (Linn.).
<i>Crotophaga ani</i> Linn.	<i>Dendroica discolor</i> (Vieill.).
<i>Coccyzus minor maynardi</i> Ridgw.	<i>Dendroica coronata</i> (Linn.).
<i>Saurothera bahamensis</i> (Bryant).	<i>Dendroica palmarum</i> (Gmel.).
<i>Ceryle alcyon</i> (Linn.).	<i>Dendroica tigrina</i> (Gmel.). †
<i>Sphyrapicus varius</i> (Linn.).	<i>Geothlypis trichas</i> (Linn.).
<i>Doricha evelynæ</i> (Bourc.).	<i>Setophaga ruticilla</i> (Linn.). ‡
<i>Contopus bahamensis</i> Bryant.	<i>Seiurus noveboracensis</i> (Linn.).
<i>Myiarchus sagræ</i> Gundl.	<i>Seiurus aurocapillus</i> (Linn.).
<i>Pitangus bahamensis</i> Bryant.	<i>Galeoscoptes carolinensis</i> (Linn.).
	<i>Mimocichla plumbea</i> (Linn.).

* An adult female of this form was killed by the writer in a mangrove swamp near Nassau. When shot it was carrying a crab in its beak. This bird is very much lighter colored than any I have seen from Andros or the Berry Islands. Another was seen a few days afterwards, but escaped.

† This species was first observed March 19, and became common after March 23.

‡ First seen March 27, one bird shot March 29; a number seen April 1.

BERRY ISLANDS.

Procuring a schooner at Nassau, we sailed to the Berry Islands, distant about fifty-eight miles to the northwest. Some of these Islands are well wooded, in many places being covered with a thick growth of good sized trees, composed principally of *lignum vitæ* (*Guaiacum sanctum* L.) and what is known as the gumbo (*Obelmoschus esculentus*), and 'mastic' trees (*Bursera gummi-fera* L.). We spent a week on the Berry Islands and then proceeded to Biminis, leaving one of our collectors — Mr. Cyrus S. Winch — on the Islands to continue the work there. We procured the following species, all of which were taken between April 3 and April 20.

<i>Sterna maxima</i> (Bodd.).	<i>Cullichelidon cyaneoviridis</i> Bryant.
<i>Pelecanus fuscus</i> Linn.	<i>Ampelis cedrorum</i> (Vieill.).
<i>Fregata aquila</i> (Linn.).	<i>Vireo crassirostris</i> Bryant.
<i>Ardea herodias</i> Linn.	<i>Cœreba bahamensis</i> (Reich.).
<i>Ardea virescens</i> Linn.	<i>Mniotilta varia</i> (Linn.).
<i>Ardea tricolor ruficollis</i> (Gosse).	<i>Compsothlypis americana</i> (Linn.).
<i>Nycticorax violaceus</i> (Linn.).	<i>Dendroica tigrina</i> (Gmel.).
<i>Rallus coryi</i> Maynard.*	<i>Dendroica coronata</i> (Linn.).
<i>Actitis macularia</i> (Linn.).	<i>Dendroica dominica</i> (Linn.).
<i>Columbigallina passerina</i> (Linn.).	<i>Dendroica kirtlandi</i> Baird.†
<i>Columba lenocephala</i> Linn.	<i>Dendroica palmarum</i> (Gmel.).
<i>Crotophaga ani</i> Linn.	<i>Dendroica discolor</i> (Vieill.).
<i>Coccyzus minor maynardi</i> Ridgw.	<i>Geothlypis trichas</i> (Linn.).
<i>Ceryle alcyon</i> (Linn.).	<i>Setophaga ruticilla</i> (Linn.).
<i>Doricha evelynæ</i> (Bourc.).	<i>Seiurus aurocapillus</i> (Linn.).
<i>Myiarchus sagræ</i> Gundl.	<i>Seiurus noveboracensis</i> (Gmel.).
<i>Agelaius phœniceus bryanti</i> Ridgw.	<i>Seiurus motacilla</i> (Vieill.).
<i>Loxigilla violacea</i> (Linn.).	<i>Galeoscoptes carolinensis</i> (Linn.).
<i>Euethia bicolor</i> (Linn.).	<i>Mimus polyglottos orpheus</i> (L.).
<i>Passerina ciris</i> (Linn.).	<i>Mimus gundlachi</i> Cab.
<i>Spindalis zena</i> (Linn.).	

BIMINI ISLANDS, BAHAMAS.

The Bimini Islands are an isolated group about midway between Florida and Nassau, situated on the edge of the Gulf

* Five specimens of this interesting bird were taken on the Berry Islands. They were not uncommon, but were shy and difficult to find. They rarely attempt to fly, but run swiftly, dodging in and out among the mangrove roots.

† This species is not uncommon in the Bahamas. We procured three examples at the Berry Islands, and my collector also obtained specimens at Abaco and the Caicos Islands.

Stream, and having no harbor that vessels drawing more than seven feet of water can enter. We stopped here to meet Mr. Charles Washburn, one of my collectors, who had been staying on the Islands for about three weeks. Very few resident species were obtained, but it is more than probable that a number of Bahama forms occur there which were not observed by us, as the time spent on these Islands was much too short to make anything like a thorough investigation.

<i>Sterna maxima</i> Bodd.	<i>Vireo crassirostris</i> Bryant.
<i>Pelecanus fuscus</i> Linn.	<i>Vireo altiloquus barbatulus</i> (Cab.).
<i>Fregata aquila</i> (Linn.).	<i>Cæreba bahamensis</i> (Reich.).
<i>Ardea herodias</i> Linn.	<i>Mniotilta varia</i> (Linn.).
<i>Ardea virescens bahamensis</i> (Brewster).	<i>Helinaia swainsoni</i> Aud.
<i>Ægialitis vocifera</i> (Linn.).	<i>Compsothlypis americana</i> (Linn.).
<i>Columbigallina passerina</i> (Linn.).	<i>Dendroica tigrina</i> (Gmel.).
<i>Columba leucocephala</i> Linn.	<i>Dendroica coronata</i> (Linn.).
<i>Crotophaga ani</i> Linn.	<i>Dendroica dominica</i> (Linn.).
<i>Ceryle alcyon</i> (Linn.).	<i>Dendroica palmarum</i> (Gmel.).
<i>Sphyrapicus varius</i> (Linn.).	<i>Dendroica discolor</i> (Vieill.).
<i>Doricha evelynæ</i> (Bourc.).	<i>Geothlypis trichas</i> (Linn.).
<i>Tyrannus dominicensis</i> (Gmel.).	<i>Setophaga ruticilla</i> (Linn.).
<i>Agelaius phœniceus bryanti</i> Ridgw.	<i>Seiurus motacilla</i> (Vieill.).
<i>Euethia bicolor</i> (Linn.).	<i>Seiurus aurocapillus</i> (Linn.).
<i>Ammodramus savannarum passerinus</i> (Wils.).	<i>Polioptila cærulea</i> (Linn.).
	<i>Galeoscoptes carolinensis</i> (Linn.).
	<i>Mimus polyglottos orpheus</i> (Linn.).

LIST OF THE BIRDS COLLECTED BY C. L. WINCH IN THE CAICOS ISLANDS AND INAGUA, BA- HAMAS, DURING JANUARY AND FEBRUARY, AND IN ABACO, IN MARCH, 1891.

BY CHARLES B. CORY.

CAICOS ISLANDS.

Dafila bahamensis (Linn.). — Not uncommon; breeds on the Caicos Islands.

Aythya affinis (Eyton).

Ardea rufescens Bodd.—Several specimens of both the white and colored plumage of this species.

Ardea tricolor ruficollis (Gosse).
Symphemia semipalmata (Gmel.).
Hæmatopus palliatus (Temm).
Columbigallina passerina (Linn).
Columba leucocephala Linn.
Zenaida zenaida (Linn.).
Pandion haliaëtus carolinensis (Gmel.).
Coccyzus minor maynardi Ridgw.
Crotophaga ani Linn.

Sphyrapius varius (Linn.).

Doricha evelynæ (Bourc.).

Tyrannus magnirostris D'Orb.—Three specimens taken. It has not previously been recorded north of Inagua.

Loxigilla violacea (Linn.).

Euetheia bicolor (Linn.).

Vireo crassirostris (Bryant).

Cœreba bahamensis (Reich.).

Compsothlypis americana (Linn.).

Dendroica petechia gundlachi Baird.

Dendroica coronata (Linn.).

Dendroica kirtlandi Baird.—Two specimens taken. I believe it has no previous record so far south. The naturalists of the 'Albatros' expedition found it not uncommon in Rum Cay.

Dendroica palmarum (Gmel.).

Dendroica discolor (Vieill.).

Seiurus aurocapillus (Linn.).

Poliophtila cærulea (Linn.).

Mimus gundlachi Cab.

Margarops fuscatus (Vieill.).

INAGUA.

Ardea herodias Linn.

Sphyrapius varius (Linn.).

Doricha lyrura Gould.

Tyrannus magnirostris D'Orb.

Myiarchus sagræ Gundl.

Loxigilla violacea (Linn.). — Mr. Winch writes me he believes the adult female of this species assumes a black plumage similar to the male. A number of black specimens taken by him proved on dissection to be females.

Euetheia bicolor (Linn.).

Vireo crassirostris (Bryant).

Cœreba bahamensis (Reich.).—Birds from Inagua have larger bills than those which occur on the northern Bahama Islands.

Dendroica tigrina (Gmel.).

Dendroica petechia gundlachi Baird.

Dendroica coronata (Linn.).

Dendroica dominica (Linn.).

Dendroica discolor (Vieill.).

Seiurus aurocapillus (Linn.).

Polioptila cærulea (Linn.).

Mimus gundlachi Cab.

Mimus polyglottos elegans (Sharpe). — Since writing the paper on *Mimus polyglottos* and *M. orpheus* which appeared in the January 'Auk' (p. 45) I have received some fifty specimens of the small *Mimus* from Inagua. With this additional material for comparison I find that a large majority of the Inagua specimens are somewhat smaller than *orpheus* or *polyglottos* and have the primary coverts nearly and often completely covering the white on the quills. These differences are not constant but are probably sufficient to justify subspecific separation.

Margarops fuscatus (Vieill.).

A box of birds lately received from Inagua contained two species not observed by Mr. Winch. These are:—

Dendroica striata (Forst.). — Six specimens, April 23 to May 2.

Dendroica cærulescens (Gmel.). — Nine specimens, April 22 to May 1.

ABACO.

Ægialitis semipalmata Bonap.

Columbigallina passerina (Linn.).

Cathartes aura (Linn.).

Crotophaga ani Linn.

Ceryle alcyon (Linn.).

Dryobates villosus maynardi

Ridgw.

Doricha evelynæ (Bourc.).

Sporadinus ricordi (Gerv.).

Myiarchus sagræ Gundl.

Pitangus bahamensis Bryant.

Loxigilla violacea (Linn.).

Euethia bicolor (Linn.).

Spindalis zena townsendi Ridgw.

Vireo crassirostris (Bryant).

Vireo altiloquus barbatulus (Cab.).

Cœreba bahamensis (Reich.).

Mniotilta varia (Linn.).

Dendroica kirtlandi Baird.

Dendroica petechia gundlachi

Baird.

Dendroica discolor (Vieill.).

Dendroica coronata (Linn.).

Dendroica dominica (Linn.).

Geothlypis trichas (Linn.).

Geothlypis tanneri Ridgw.

Seiurus noveboracensis (Gmel.).

Seiurus aurocapillus (Linn.).

Polioptila cærulea Linn.

Galeoscoptes carolinensis (Linn.).

Mimus polyglottos orpheus (L.).

Mimocichla plumbea (Linn.).

RECENT LITERATURE.

Gätke's 'Die Vogelwarte Helgoland'.*—The long expected report of Herr Gätke's forty years' observations on the birds of Helgoland forms a beautiful volume of over 600 pages, replete with matter of the highest interest to ornithologists and bird-lovers the world over. Helgoland, a rocky islet at the mouth of the River Elbe, about a mile in length by a third of a mile in width, rising almost vertically on all sides to a height of about 200 feet above the sea, has long been celebrated in ornithological annals for its many waifs and strays of bird life, which through Herr Gätke have found an ever alert and faithful chronicler. Helgoland is situated in one of the great highways of bird migration, and from its isolated position and height above the sea is a natural resting place for the hordes of tired wanderers on their long semi-annual journeys. At this little watch-tower Herr Gätke has taken nearly four hundred species (396 is the exact number recorded), including waifs "from the far North, East, West, and South,"—from Siberia, North America, the Arctic Regions, Africa, and Asia Minor.

The work is edited by Dr. Rudolf Blasius, who dedicates it to the memory of his father who brought early to notice the remarkable observations of Herr Gätke. The work is divided into three parts: I, Migration of Birds; II, Change of Color in Birds without moulting; III, Birds observed at Helgoland. The first part contains chapters on (1) The ordinary migration at Helgoland (pp. 3-23); (2) Direction of the migratory flights, (pp. 24-45); (3) Height at which migratory birds fly (pp. 46-64); (4) Rapidity of their flight (pp. 65-75); (5) Meteorological conditions affecting migration (pp. 76-101); (6) Migration in relation to age and sex (pp. 103-115); (7) Exceptional appearances (pp. 116-133); (8) What guides birds during migration? (pp. 134-146); (9) What causes birds to migrate? (pp. 148-152).

Herr Gätke's observations throw much light on many problems connected with migration, and it is to be hoped that his 'Vogelwarte Helgoland' will be promptly translated and made generally available to English readers. In his chapter on 'Migration in relation to age and sex' (Zug nach Alter und Geschlecht), he combats vigorously what he considers the erroneous ideas of the early times respecting the fall migration, namely, that the old birds are the leaders, teachers, and guides of the young. He gives it as incontrovertably proven by his observations on the birds of Helgoland, that, in the fall, the young birds begin to appear within from six to eight weeks after they leave the nest, and that the old birds of the same species follow some two months later, and that the migration as a rule is closed by the finest old males. In spring he finds it to be the in-

* Die | Vogelwarte Helgoland. I — | Von Heinrich Gätke, | . . . [=5 lines, titles]
| — | Herausgegeben | von | Professor, Dr. Rudolf Blasius. | — | Braunschweig | Joh.
Heinr. Meyer. | 1891. | Roy. 8vo, 6ll., pp. 1-609, and frontispiece (portrait of author).

variable rule in all species that the finest old males reach the breeding grounds first, followed soon by the old females, while the young birds close the migration.

He notes the occurrence at Helgoland of fifteen species of North American birds, each, with the exception of two, represented by a single example, as follows:—

<i>Merula migratoria.</i>	<i>Dolichonyx oryzivorus.</i>
<i>Turdus u. swainsoni.</i>	<i>Charadrius dominicus.</i>
<i>Turdus a. pallasi.</i>	<i>Actitis macularia.</i>
<i>Turdus fuscescens.</i>	<i>Tryngites subruficollis.</i>
<i>Galeoscoptes carolinensis.</i>	<i>Larus philadelphia.</i>
<i>Harporhynchus rufus.</i>	<i>Rhodostethia rosea.</i>
<i>Dendroica virens.</i>	<i>Nema sabinii.</i>
<i>Anthus pensilvanicus.</i>	

The migration of each of the nearly four hundred species is treated in detail, sometimes several pages being given to a single species. A work on birds possessing more general interest has doubtless not for a long time appeared, it fully warranting the pleasant anticipations its announcement long since awakened.—J. A. A.

Cory's 'Birds of the Bahama Islands'.*—The revised edition of Mr. Cory's 'Birds of the Bahama Islands', issued a few months since, is a 'remainder' from the first edition, issued with uncolored plates, and the addition of nine interpolated unpagged leaves, giving (1) a 'Preface to Revised Edition' (one page); (2) 'Ornithological Bibliography of the Bahama Islands' (2 pages, 16 titles); (3) 'Species and Subspecies described since 1880' (9 pages, 14 species and subspecies); (4) 'Species and subspecies which have been added to the Fauna since 1880' (1 page, 2 species and 1 subspecies); (5) 'Corrections and changes which have been made since 1880, with remarks on several species which should be eliminated' (2 pages, containing remarks on 8 species); and (6) 'Changes in Nomenclature and Classification' (2 pages). *Mimocichla rubripes*, *Loxigilla noctis*, and *Sporadinus bracei* are expunged from the list of Bahama birds, as given in the first edition, and the last named species is considered as identical with *S. ricordi*. The 'changes in nomenclature' consist mainly of a concordance, showing the present equivalents of various names used in the first edition. During the interval of ten years between the publication of the original and the revised edition much has been added to our knowledge of the subject, and the author has "thought it advisable to issue the few remaining copies of the first edition in the form of a revised edi-

*The Birds of the Bahama Islands containing many birds new to the Islands and a number of undescribed winter plumages of North American birds. By Charles B. Cory, [= 12 lines, honorary titles, etc.] Revised Edition. Estes & Lauriat, Boston, U. S. A. 1890.—4to, pp. 1-250, plus 9 unpagged interpolated leaves, pl. 8, uncolored.

tion, giving the species or races described or eliminated, and whatever changes that have been made during that time." These changes of course greatly increase the value of a work which has proved very serviceable to sojourners in the Bahamas interested in the birds of the Islands, as well as to ornithologists. — J. A. A.

Grant's 'Our Common Birds.'* — The purpose of this little book is to furnish the beginner with useful hints in the study of the bird life about him. The work is unique in plan and execution. Ninety species are treated, selected from the more common and striking birds met with in the vicinity of New York City, the males only of which are described. The illustrations consist of photogravures from stuffed specimens. They serve to show what can be done by means of photography in illustrating from museum specimens. Where the pattern of coloration is distinctive, the birds are readily recognizable from the portraits here presented. In other cases it would be difficult for even the ornithological expert to tell them. In the case of large birds, where the figures are necessarily much less than natural size, the effect is quite satisfactory; with the smaller birds, the figures of many of which are nearly or quite natural size, all the defects of taxidermy (which unfortunately are glaring) are magnified, with most unhappy results. Although in many instances no idea of color, or even the distribution of the different tints, can be given by any known process of photography, yet with specimens mounted in the highest style of the taxidermists' art, and with some attempt at a natural effect in respect to pose and accessories, the results might be more satisfactory.

The text is well written, much care having been taken to secure accuracy of statement, while the spirit of the book is admirable. Much good advice as to where, how, and when to look for birds is given in the first fifty pages, including explanations of many technicalities, and a calendar indicating the seasons when the various species may be looked for. The author is an enthusiastic admirer of nature and strives to impart his enthusiasm to his readers. The book has thus a decidedly literary flavor. It is in the form of an oblong octavo, and in typography and arrangement is an attractive little volume. Doubtless it will touch a popular chord and be widely welcomed as a stimulating companion to many who, without aiming to be scientific, desire a speaking acquaintance with the feathered tenants of wood and field. — J. A. A.

Thompson's 'Birds of Manitoba.'† — In a paper of nearly two hundred pages Mr. Thompson gives his field notes on the birds of Manitoba made during a three years' residence in the Province, covering parts of the

* Our Common Birds † and how to know them | By | John B. Grant | With sixty-four Plates | New York | Charles Scribner's Sons | 1891. | pp. 216, 64 photogravure illustrations.

† The Birds of Manitoba. By Ernest E. Thompson, of Toronto, Canada. Proc. U. S. Nat. Mus., Vol. XIII, 1890, pp. 457-643, pl. xxxviii. (Published June, 1891.)

years 1882 to 1887, supplemented by those of "numerous observers in various parts of the Province." In addition to this an attempt is made to include all published records bearing on the distribution of Manitoban birds which have not appeared in distinctively ornithological publications. In an introduction of eight pages the author defines the boundaries of the Province, and describes in much detail its physical features. The accompanying map shows also the distribution of both the deciduous and coniferous forests, the marshes, sand dunes, and prairies. Then follows (1) The annotated list of the birds, numbering 272 species and subspecies; (2) 'A chronological list of the principal books and articles consulted (4 pp. with 44 titles); 'A list of the manuscripts used in completing the foregoing Notes' (2 pp. 16 titles); and (4) an index to the paper.

Mr. Thompson's own copious field notes, supplemented by a large amount of inedited matter, render the paper a most welcome and important contribution to the ornithology of what was a practically unworked field when Mr. Thompson entered it. His list of 'The Birds of Western Manitoba,' published in 'The Auk' for 1888 (III, pp. 154-156, 320-329, 453), has shorn it of much of the novelty it would otherwise have presented, and prepared us for the fuller exposition of the subject his brief annotations in the former paper foreshadowed. Not only does each page add to our knowledge of the distribution of the birds over the region in question, but also of their habits and life history. Many of his own notes are given as actual transcripts from his field journal, and have thus the freshness and inspiration of direct contact with nature. The inedited manuscripts include important observations, often covering considerable periods in the field, of a dozen or more well known Canadian ornithologists, many of these documents having been originally prepared for and communicated to the A. O. U. Committee on Bird Migration. In addition to these are copious extracts from the unpublished 'Observations on Hudson's Bay' by Thomas Hutchins, who for twenty-five years, prior to 1780, was an agent of the Hudson's Bay Company. While the literary execution of the work is not above criticism, many of the biographical notes have a spirit and originality amply atoning for minor defects.—J. A. A.

Canadian Bird Notes.—A paper of 25 pages, entitled 'Proceedings of the Ornithological Sub-section of the Biological Section of the Canadian Institute,* for the months of January, February, and March, 1890, contains 110 separate notes, published over the names of the contributors, on the birds of the region about Toronto. They relate to uncommon visitors, and the nesting of the rarer kinds, and include a large number of very interesting records, which are thus conveniently brought together and made readily accessible. Mr. W. Cross records and describes a hybrid *Pinicola enucleator* × *Carpodacus purpureus*; Dr. C. K. Clarke brings forward very conclusive evidence of parasitism in the Black-billed Cuckoo (*Coccyzus erythrophthalmus*), citing three instances of its depositing its

* Extract from Transactions of the Canadian Institute, 1890.

eggs in the nests of other birds, leaving them to be hatched and the young reared, in one case by a pair of Yellow Warblers, in two cases by Chipping Sparrows; Mr. E. E. Thompson records the capture of a male English Linnet (*Linna cannabina*) at Toronto. There are many interesting winter records of visitors from the far North, and various instances of rather southern species wintering. The article concludes with a list of the ornithological papers published in the 'Canadian Journal' (1853 to 1889, inclusive).

A second paper, entitled, "The Birds of Ottawa," gives a list of birds found in the neighborhood of Ottawa, compiled from the records of the Ottawa Field-Naturalists' Club, embodying the work of the 'Ornithological Branch' of the Club from the beginning of the year 1881 to the end of the year 1890. This list is a revision of the list published in 1882, from which a number of species are eliminated and others added, including two here given for the first time, the total number now recorded being 224. The district covered is an area of thirty miles radius from the city of Ottawa. The annotations consist generally of abbreviations signifying the season of occurrence and relative abundance, though many of the rarer species are followed by more or less extended remarks.—J. A. A.

Stone's List of 'Birds collected in Yucatan and Southern Mexico.' † — Mr. Witmer Stone, Curator of Birds in the Philadelphia Academy of Natural Sciences, accompanied Prof. Angelo Heilprin on his recent expedition to Yucatan and the Highlands of Southern Mexico, of which the present paper gives the ornithological results. An annotated list is given of 96 species collected in Yucatan during about five weeks, from Feb. 22 to March 26, 1890. A list of the 18 species taken during a few days' stay at Orizaba, and a third list of 33 species taken near Chalchicomula and on the Peak of Orizaba, completes the paper. Interesting comparisons are made between the bird life of the several localities visited in Southern Mexico. A few species collected by Mr. F. C. Baker at different points in Western Mexico are also mentioned.—J. A. A.

The Owls in the Collection of the Philadelphia Academy of Natural Sciences. — Mr. Witmer Stone has recently published ‡ a 'Catalogue of the Owls in the Collection of the Academy of Natural Sciences of Philadelphia,' which numbers 113 species, represented by 525 specimens, including the types of 14 species. Among the types are those of several of Cassin's species, of several of Gould's Australian species, and of *Bubo subarcticus* Hoy. — J. A. A.

* Ottawa Naturalist, Vol. V, No. 2, May, 1891.

† Proc. Acad. Nat. Sci. Phila., 1890, pp. 201-218.

‡ Proc. Acad. Nat. Sci. Phila., 1890, pp. 124-131.

Stone on the Genus *Psilorhinus*.^{*}—Of the four species described by authors—*P. morio* (Wagl.), *P. mexicanus*, Rüpp., *P. cyanogenys* Sharpe *P. vociferus* (Cabot)—*P. cyanogenys* Sharpe is referred to *P. mexicanus*, the characters of *P. cyanogenys* being individual and inconstant; *P. vociferus* also proves barely separable from *P. mexicanus*. The type of *P. vociferus* is in the collection of the Academy.—J. A. A.

Professor Thompson on the Systematic Position of *Hesperornis*.—Among the more recent of the anatomical papers from time to time published by University College, Dundee, is one by Professor D'Arcy W. Thompson 'On the Systematic Position of *Hesperornis*,[†] in which the author, after a careful and concise comparison of *Hesperornis* with *Colymbus*, sums up as follows: "It appears to me that from purely osteological characters, the wide differences between *Hesperornis* and any Ratite, and its close resemblance to *Colymbus* or to *Podiceps* is clear and patent."

The Colymbine affinities of *Hesperornis* have been dwelt upon at some length by Dr. Fürbringer; and Dr. Shufeldt, although giving no reasons for his conclusions, has stated his opinion that the Loons and Grebes are derived from the same ancestral stock as that to which *Hesperornis* belonged. Professor Thompson seems to have to some extent misunderstood Dr. Fürbringer's conclusions, and the latter in a recent paper has felt the necessity of giving full quotations from his 'Morphology' to show that Professor Thompson's views were substantially those previously brought forward by himself.

We are not quite prepared to accept the statement that the resemblance existing between *Hesperornis* and *Colymbus* are "as great as between *Strigops* and the other Parrots," preferring to hold with Dr. Helm that *Hesperornis* is an early and highly specialized offshoot from the stem of which the Loons and Grebes are later branches.

In respect to the pelvis, it hardly seems that Professor Thompson or Dr. Helm lay quite enough stress upon the general character of the pelvis and the separation of ilium from ischium; although, on the other hand, this does not necessarily indicate Struthious affinities, a more exact statement of the case, perhaps, would be that the pelvis of *Hesperornis* is of a low, or generalized type, highly modified for swimming.

There are many interesting points that might be dwelt upon, but space will not permit.

The many structural resemblances—morphological and physiological—between *Hesperornis* and *Colymbus* are well brought out, and we think that most ornithologists will agree with Professor Thompson that the proper place for *Hesperornis* is a long distance from the Ostriches.

^{*} On the Genus *Psilorhinus* Rüppell. By Witmer Stone. Proc. Acad. Nat. Sci. Phila., 1891, pp. 94-96.

[†] Studies from the Museum of Zoölogy in University College, Dundee, Vol. I. No. 10.

To slightly modify his words we might say that *Hesperornis* is a Colymboid bird of great size and prodigious swimming power, which, while losing its wings and sternal keel and otherwise somewhat modifying its shoulder-girdle as the faculty of flight degenerated, has retained in its brain case, its palate (?), its mandibles, its vertebrae, its sternum, pelvis, and hind limbs resemblances to existing *Colymbi* that clearly indicate its affinities with these birds; and with these modifications we are quite in accord with Professor Thompson. — F. A. L.

Townsend on the Birds of the Coast and Islands of Upper and Lower California.* — The observations here recorded were made during a cruise of the U. S. Fish Commission steamer 'Albatross' from San Francisco to the Gulf of California, during the winter of 1888-89. The collection of birds gathered by Mr. Townsend numbered 226 specimens, representing 92 species and subspecies, 11 of which are here described as new. The islands at which collections were made are San Clemente, San Nicolas, Santa Barbara, Santa Rosa, and Santa Cruz, off California, and Guadeloupe, Cerros, Clarion, Socorro, San Benedicte, Carmen, George, and Angel Guardia, off Lower California. The paper consists of thirteen separate lists, representing as many distinct localities at which collections were made, with a record of the specimens taken, but generally no further remarks as to whether the species were common or otherwise. The following are described as new: (1) *Speotyto rostrata*, (2) *Zenaidura clarionensis*, (3) *Troglodytes tanneri*, (4) *Puffinus auricularis*, all from Clarion Island, off Lower California; (5) *Oceanodroma socorroensis*, from Socorro Island; (6) *Amphispiza belli cinerea*, from Ballenas Bay, Lower California; (7) *Otocoris alpestris pallida*, from near the mouth of the Colorado River, Sonora; (8) *Melospiza fasciata graminea*, from Santa Barbara Island; (9) *Helminthophila celata sordida*; (10) *Melospiza fasciata clementæ*, and (11) *Otocoris alpestris insularis*, from San Clemente Island.

A single specimen of *Halocyptena microsoma* Coues was taken in Panama Bay, March, 1888, forming the second known specimen of the species. — J. A. A.

Palmer on Birds observed during the Cruise of the 'Grampus.' † — The U. S. Fish Commission schooner 'Grampus,' on her summer cruise in 1887, visited the Magdalen Islands and Bird Rocks in the Gulf of St. Lawrence, the Funk and Penguin Islands, the Mingan Islands, and

* Birds from the Coasts of Western North America and adjacent Islands, collected in 1888-89, with Descriptions of New Species. By Chas. H. Townsend. Proc. U. S. Nat. Mus., Vol. XIII, 1890, pp. 131-142.

† Notes on the Birds observed during the Cruise of the United States Fish Commission Schooner Grampus in the Summer of 1887. By William Palmer. Proc. U. S. Nat. Mus., XIII, 1890, pp. 249-265.

touched at points on the coasts of Newfoundland and Labrador, Mr. Palmer accompanying her for the purpose of observing and collecting the fish-eating birds, their eggs and young. He records 40 species of water birds, respecting most of which he has copious and very interesting notes, especially respecting the species of *Alcidæ* and *Laridæ* observed. He also noted incidentally 38 species of land birds, an annotated list of which is also presented, in which "*Corvus corax nobilis* (Ridgw.)" is doubtless a *lapsus calami* for *Corvus corax principalis* Ridgw. — J. A. A.

Lucas on the Anatomy and History of the Great Auk.* — In 1887 Mr. Lucas, under the direction of the late Professor Baird, visited Funk Island for the purpose of obtaining remains of the great Auk. The object of this visit was satisfactorily accomplished, Mr. Lucas succeeding in obtaining not only a large quantity of the bones of this extinct bird, but much interesting information respecting one of its former favorite breeding resorts. The results of these investigations are given in the present paper, which opens with a chapter entitled 'The Bird Rocks and Funk Island in 1887,' occupying the first twenty pages. It includes an account of the gradual extinction of the Great Auk at the localities named, and its causes, etc., and is illustrated with a sketch map of Funk Island. The second part of the paper is on 'Skeletal Variation in the Great Auk,' the principal variations being graphically presented by means of diagrams. The paper concludes with a 'List of Books and Papers Relating to the Great Auk,' an annotated list occupying five pages, from which it appears that the earliest known reference to the Great Auk was published in 1534. There are photogravure illustrations of the mounted specimen of the Great Auk, and of the Great Auk's egg, in the collection of the National Museum. The paper presents much valuable historic and anatomical information about this flightless and now extinct bird. — J. A. A.

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GENERAL NOTES.

Brünnich's Murre in Connecticut.—The occurrence of Brünnich's Murre (*Uria lomvia*) along the Connecticut coast during the past winter (1890-91) in large numbers, seems worthy of notice, since the species was not recorded in Linsley's or Merriam's list, nor have I seen any Connecticut record.

On February 7 I picked up a dead specimen on the beach at Bridgeport and a few days later three more. The finding of these specimens was the first indication I had of the occurrence of the bird, as I had been absent from home during the winter until the above mentioned date.

At New Haven I saw a stuffed specimen in the store of Folsom & Co. and learned that it was secured at Saugatuck Harbor by Mr. D. C. Sanford, a government surveyor, who had also secured another at that place.

Mr. W. F. Davis of Stony Creek writes me that hundreds could be seen there from the 1st to the 10th of January, so tame they could be taken in the hand; they could fly but seemed hungry and fatigued, some being found five miles from the salt water; he thought many died of starvation. He adds that he used to see great numbers of them when a boy, at Nantucket Shoals, where they were called Murres.

At Stratford I found a stuffed specimen in the village drug store and another in the possession of Mr. L. B. Beers. They had been seen in large numbers and attracted general attention. They were described as very tame but no one that I talked with seemed to think that they had starved. Mr. Theodore Judson, keeper of the Stratford Light, assured me that he had seen the bird occasionally before, but had regarded it as rare.

Mr. Wm. H. Hayt, an associate member of the A. O. U., writes me from Stamford as follows: "The Murres were plentiful here from Dec. 20 to about Feb. 10. A large number were shot. Fourteen specimens fell under my own observation. They all seemed to be in the last stages of starvation. One was found by the road side at some distance from the shore where it had evidently fallen from exhaustion. The stomachs of those which I examined contained nothing but sand.

I received information from several other persons at different places but think the above sufficient to indicate the extent of the movement. As all the specimens I examined were Brünnich's Murre, I refer all the notes to that species.

Since writing the above I have been informed by Mr. D. C. Sanford that from Penfield Reef Light House, off Black Rock, to the mouth of Saugatuck River "there were thousands of them, and hundreds were shot off Saugatuck."—C. K. AVERILL, Jr., *Bridgeport, Conn.*

The Sandhill Crane (*Grus mexicana*) in South Carolina.—On October 18, 1890, I heard a most remarkable sound, something like that made by blowing a large tin horn. I was told by one of the negroes on the plantation that it was a Wild Goose. Early in the morning of the following day I heard the note again and saw the bird flying in the heavens. One glance was enough to show me it was a Crane. After sailing about for some hours it flew down in a corn field among a drove of cows. I started in pursuit with my brother-in-law: he taking a stand, and I one, about a hundred yards away. The bird rose but sailed away from both of us,—not near enough for a shot. It sailed about in circles until it was lost to our view.

On the 21st I started to the corn field again with the hope of seeing the bird. Upon shooting four Doves (*Zenaidura macroura*), the Crane arose from the field where it had been feeding along with the cows and flew about a mile away. Away I went in pursuit but found it was impossible to get nearer than a hundred yards without being seen.

I waited under some bushes for an hour hoping it would come nearer. The whole time the bird remained on the ground it was making the trumpet-like sound. Finally it flew and lit about half a mile off in a myrtle pasture, where there were two ponds of water. I knew I would in the end secure the bird, so walking cautiously about I at last saw the red on his head. He was standing in the middle of the pond, and as he rose I secured him. The bird is an adult male in perfect plumage. Although the specimen is considerably smaller than average *Grus mexicana*, for the present it may stand as such.

This is the first record of this bird in the State, to my knowledge.—ARTHUR T. WAYNE, *Mt. Pleasant, S. C.*

Capture of a Fourth Specimen of *Ardetta neoxena*.—A specimen of *Ardetta neoxena* was shot on the Kissimmee River, Florida, by Mr. R. C. Stewart, on May 19, 1890. The bird is a male in full plumage, and is apparently exactly like the type. Mr. Stewart claims to have seen another, but he was unable to secure it. This is I believe the fourth specimen of the species known to have been taken, three of them having been recorded from the lower Kissimmee or Okeechobee region, and the fourth is claimed to have been killed in Ontario, Canada, and was sent to Mr. Ridgway for examination by Mr. McIlwraith.—CHARLES B. CORY, *Boston, Mass.*

Notes on the Nest and Habits of Cory's Bittern (*Botaurus neoxenus*).—Mr. J. F. Menge of Fort Meyers, Florida, has kindly written me the following account of a nest of Cory's Bittern. He is familiar with the bird and is the gentleman who collected and sent to me the specimen mentioned in 'The Auk,' Vol. VI, 1889, p. 317. This letter is under date of May 20, 1891, and I quote from it as follows:

"I herewith send you notes concerning the Bittern as requested by Mr. J. W. Atkins, first found on 8th of June, 1890, two and a half miles above Fort Thompson, Florida, in a small willow swamp on the borders of Lake Flint. It was built of willow twigs and lined inside with maiden cane leaves. It was in a low bush two feet and a half above the surface of the water. There were four young birds, about two-thirds grown in the nest. I had one of the old birds in my hand, which I think was the female. She was not inclined to fight and would not leave the nest. The other old bird was two or three feet from me and seemed a much larger bird. I did not disturb them and when I let the old bird go she hopped back on her nest as though she were accustomed to being handled. The Brown Bittern [local name for *Botaurus exilis*, *B. neoxenus* being known as the Black Bittern—W. E. D. S.] will fight, for I have had them come up

within six inches of my hand when collecting eggs. I shall try and get more specimens of the bird I sent you [No. 3237. W. E. D. S. Register; see Auk, VI, p. 317] but they are not very plentiful here and are hard to find."—W. E. D. SCOTT, 58 William Street, New York City.

Phalaropus lobatus off Scituate, Mass.—On August 30, 1890, I made my first acquaintance with the Northern Phalarope. As my friend Mr. Marcus Barber and myself were returning from a trip to the Gurnet, Plymouth Harbor, in my sail-boat, when off Fourth Cliff Life Saving Station, we observed what we at first supposed was a large flock of Sandpipers, some two hundred or more, flying to and fro from shore, and were surprised to see them settle on the water. Heading the boat for them, we soon came within gunshot, and secured eight as they rose, they being so scattered as not to offer a good shot. On picking them up, I at once recognized them as one of the Phalaropes. We watched this flock pass from view to southward. Leaving my friend soon after at the Cove, I made sail for Scituate Harbor, about a mile distant; but had not been long underway when the boat was in the centre of a second flock as large as the first, giving me a fine opportunity to watch the bright eyed little birds, as they rode up and down on the light sea that was running. These finally took wing, but had not passed from sight before a third flock nearly as large showed up over the bow; making in all between five and six hundred birds seen within an hour's time. The last were nearly opposite the Harbor, in which I soon dropped anchor. The birds secured proved to be all young of both sexes, except one, an adult female, but no two were alike in plumage. Taking into consideration Mr. W. A. Jeffries' account of 'Phalaropes at Swampscott' (Auk, Jan. 1891, p. 112), and the statement made by my friend Mr. Barber, who in ten years' service along shore "never saw anything like it before," the flight of Phalaropes along our shore last fall must have been a remarkable one. The wind at the time was blowing a fair northwest breeze.—H. D. EASTMAN, Framingham, Mass.

The Wild Pigeon (*Ectopistes migratorius*) on the Pacific Coast.—I was recently informed by a correspondent, who edits a small weekly journal published in Philadelphia, that Mr. Caleb S. Cope of West Chester, Pa., had seen Wild Pigeons in considerable numbers in "Washington Territory."

This information had been elicited in response to the republication in the above mentioned journal of Mr. Brewster's article in 'The Auk' of October 1889; on the 'Present Status of the Wild Pigeon as a bird of the United States.' A gentleman living in Lycoming Co., Pa., who used to trap Wild Pigeons many years ago, informed my friend that it was commonly understood among those in the business that the Pigeons had gone to the far West and British Columbia on account of their persecution in the eastern and central portions of the United States.

Such testimony being contrary to the published experience of ornithologists, I wrote Mr. Cope to discover by a few leading queries whether his identification of the species was correct. His answers were highly satisfactory, showing that he was not only an admirer of nature but an accurate and intelligent observer. I forwarded his letter to Mr. Brewster, with whom I had previously had some correspondence on the same subject, and he expressed his belief that the evidence presented was unmistakably genuine and worthy of immediate publication. During the spring of 1887, in company with his son, Mr. Cope travelled extensively through the West—"straggling beyond the plains into California, Oregon, Western Washington, and Vancouvers' Island"—where, he says, "I saw and heard more Wild Pigeons (*Ectopistes*) than I remember to have ever met with in any other place." The locality where most of the Pigeons were observed was on an extensive plain in Pierce County, Washington, fifteen miles east of Puget's Sound, between the Sound and the Cascade mountains.

This fertile plain was "dotted over with clumps of pine and fir trees, in many instances bent down by flocks of Wild Pigeons that feasted on the strawberries which in some places were so abundant as to give the sward a scarlet tinge." These flocks numbered several hundreds in each, and during the short time spent there (a few days) plainly showed they were but "transitory visitants" passing northward and unlikely to breed in that vicinity.

It is difficult to account for this (so far as known) unprecedented occurrence of a well-known bird in such numbers in a region where hitherto it had been seen only as a rare straggler.

Taking into account the power of flight and wandering nature of the Passenger Pigeon and coupling this with the persecution it has been subjected to during the nesting season, we might naturally expect a change of habitat, but even the most heterodox would scarcely conceive of a sudden and united movement across a thousand miles of unknown territory and two ranges of lofty mountains for the sole purpose of establishing a new route of operations in more peaceful territory. If this was the actual state of affairs in 1877 and has continued to be, the A. O. U. may well look to its laurels. But this is scarcely possible. The region described has been frequently traversed by naturalists and others who would appreciate and report such an unusual occurrence if repeated year after year. Every bird lover would rejoice to hear that this wonderful bird had finally outwitted its great persecutor and lengthened its lease on life by 'going West' in the true American spirit of liberty; and it is fitting that we use every effort to protect and foster a movement so unprecedented. But a study of the past history of *Ectopistes* should prepare us for these apparently startling disclosures. There is no American bird of strictly gregarious and migratory habits that is found breeding over so great an area—viz., from Mexico to Hudson's Bay and British Columbia, and from the Atlantic Ocean to the Rocky Mountains.

Mr. Nuttall acutely observes in this relation: 1st, that the congregating propensity of this bird has "no relation with the usual motives to migration among other birds"; 2nd, "Nearly the whole species which at any one time inhabit the continent are found together in the same place"; and 3rd, "They do not fly from climate, as they are capable of enduring its severity and extremes." These characteristics, being rendered the more wonderful and effective by surpassing power of flight, enable the Wild Pigeon to defy the petty limitations which environ and restrict other migratory birds and even to set at nought the one law of nature which beyond any other has proved itself most absolute, tyrannical and mysterious,—the law of geographical distribution of species.

Viewed from this standpoint we may regard the occurrence of *Ectopistes migratorius* on the Pacific Slope as a thing so natural that we wonder why it never happened before. Indeed there should now be many of us who doubt not that it has often happened, and who ask, on behalf of our feathered cosmopolite, an ampler breeding range than the books accord, making it from Ocean to Ocean, and from Mexico to Alaska. Despite our attempts to bridge these gaps in the life-history of North American birds, there yet exists in New World ornithology a *terra incognita* of no small proportions, a fact that should not discourage, but inspire us all to renewed endeavor.—SAMUEL N. RHOADS, *Haddonfield, N. J.*

The Breeding Range of the Sparrow Hawk (*Falco sparverius*) in Texas.—That this bird is credited with "breeding in suitable localities from Maine to California, and from the Fur Countries south into Mexico" by old and undoubted authorities in ornithology is readily admitted. That it is migratory in northeastern Texas, especially in Cooke County, is proven from my note book showing its departure in April and May and its return in July and August, for a number of consecutive years.

The question then to be considered is, what constitutes a *suitable* nesting locality? I readily admit that I don't know. If a belt of timber (post oak, black oak, elm, black walnut, black hickory, etc.) fifteen miles wide and one hundred miles long is not suitable for the nesting of this bird, then I need not expect its young to be raised in Cooke County.

But Mr. Lloyd records its nesting in Tom Green County, Texas, where the timber is more scrubby than in Cooke County. How is the bird's behavior in this matter to be reconciled with its not breeding in Cooke County? I must again confess ignorance of the reason. The only place I have personal knowledge of the birds' breeding in the State is in Polk County, in the Pine Region of southeastern Texas. In April, 1889, I saw the birds paired and entering holes in the dead pines, in such manner that I felt convinced that they would remain during the season. Mr. J. A. Singley, in Lee County, some seventy-five miles west of Polk County, writes me, "I have never found the Sparrow Hawk breeding in Texas or Mexico." However, he has a report of its nesting in Lee County, in former years. A great many eastern 'species' of birds fail to penetrate the dry plateau region of Texas. Many varieties (subspecies) of eastern forms,

occur in this plateau region. Perhaps the Sparrow Hawk of the plateau region of Texas, in which Tom Green County is situated, will prove to be distinct from the eastern bird when more carefully studied.—G. H. RAGSDALE, *Gainsville, Texas*.

Great Gray Owl in Worcester County, Mass.—A Great Gray Owl (*Scotiaptex cinerea*) was killed in Princeton, Feb. 28, by E. T. Whitaker, a member of the Worcester Sportsmen's Club. The day was severely cold, the thermometer registering 4° below zero. This is the first record for this species in this County.—GEORGE B. CHURCHILL, *Worcester, Mass.*

Acadian Owl (*Nyctala acadica*) at Washington, D. C.—The Acadian Owl has always been considered of extremely rare occurrence at the Capital; in fact until the present winter but five specimens were known from this locality. The first of these was taken by Mr. Drexler some years ago, which was followed by an occasional capture from time to time. On December 12, 1890, an adult male was taken by Mr. Walter B. Barrows three miles east of the city at Brookland. This served as a stimulus for close search, and on January 4, 1891, reward came in the shape of three females taken by Mr. J. D. Figgins and myself. These were mostly in a dense thicket of pines, less than half an acre in extent, and the peculiarity especially noticeable was the fact that not a single male was to be found, although we searched the woods again and again, as well as neighboring patches of pine. On Feb. 4 or 5, 1891, one flew into the Smithsonian building where it was captured alive, and now serves as one of the attractions of the 'Zoo', making a total of five taken the past winter, or as many as all previous records taken together.

It would appear from this that the species is much more common than ordinarily supposed, but if such be the case it is strange that no more have been taken, as scarcely a week has passed that Mr. Figgins and myself have not spent at least one day in the woods, and always with an eye open for *Nyctala*, but since the record of January 4, not a feather has rewarded our efforts, and it must, I think, still be considered as one of the rarer birds of the district.—EDWIN M. HASBROUCK, *Washington, D. C.*

Occurrence of the Groove-billed Ani at Jupiter Inlet, Florida.—While at Palm Beach, Lake Worth, Fla., my friend, Mr. Franz Kinzel, a resident there, informed me that an example of *Crotophaga sulcirostris* Swains. had been shot during the first week in January last at Jupiter Inlet. Mr. Kinzel examined the bird, and identified it himself with the aid of Ridgway's 'Manual,' in which it is stated that this species has only occurred in the United States in the Valley of the lower Rio Grande in Texas, thence extending southwards to Peru.—A. S. PACKARD, *Brown University, Providence, R. I.*

Groove-billed Ani (*Crotophaga sulcirostris*) in Arizona.—A specimen of the Groove-billed Ani is now in my possession which was shot about

the middle of May, 1888, at the Batterman Ranch in the foothills of the Huachuca Mountains, ten miles north of the Mexican border in Cochise County, Arizona. The specimen was shot by Mr. O. C. Smith of Tombstone, A. T., from a live oak tree on the ranch, and was in the California Academy of Science, with the Price collection of Arizona Birds, until presented to me by Mr. Smith the past winter. — OTHO C. POLING, *Arizona*.

The First Plumage of *Otocoris alpestris strigata* Hensh. — ♀ juv. (No. 5080, collection of G. S. Miller, Jr., Salem, Marion Co., Oregon, June 29, 1890; Allen Rhodes' collector): Plumage of dorsal surface seal brown, the feathers everywhere edged with ochraceous-buff, which color is most conspicuous on the upper tail-coverts, rump, cervix, remiges and wing-coverts; interscapulars, scapulars and some of the tertials and wing-coverts tipped with dirty white; rectrices slightly darker than remiges and general dorsal surface, the outer pair tipped and edged externally with dirty white, the inner pair much suffused with ochraceous-buff; ventral surface pure white; chin and throat slightly marked with dusky; jugulum, sides, and flanks ochraceous-buff, flecked, especially on the jugulum, with obscure brownish; cheeks, lores and forehead mixed brown and whitish. The first plumage of this form resembles more closely the young of *praticola* than it does the corresponding stage of any of the western races. The white edgings of the feathers of the back, so conspicuous in the young of *merrilli*, are here replaced by ochraceous-buff; while the dark ground color above makes it a very different looking bird from the young of any of the other forms found in the western United States. From the first plumage of *praticola* I am able to find no distinguishing character, except that the buff is everywhere brighter than in the brightest *praticola* that I have seen. The young of *praticola* are very variable in the shade of both ground color and markings, and it will be interesting to see whether further material will show as great a range of variability in the young of the present race. — G. S. MILLER, JR., *Cambridge, Mass.*

European Goldfinch (*Carduelis carduelis*) Breeding in Worcester County, Mass. — There have been brought to the rooms of the Natural History Society in this city a nest and five eggs of the European Goldfinch (*C. carduelis*), with the skin of the female. They were taken in Northville, a suburb of this city, July 11, 1890, by Mr. F. S. Wilder. The nest was in an apple tree within seven feet from the ground, and corresponds to the description in Ridgway's 'Manual,' except that it contains no moss. The female is in fair breeding plumage. The male was not seen. — GEO. CHURCHILL, *Worcester, Mass.*

Description of the Nests and Eggs of *Dendroica gracia* and *Contopus pertinax*. — Among my oölogical accessions of the past season were the nests and eggs of two species not described heretofore, viz., *Dendroica gracia*, Grace's Warbler, and *Contopus pertinax*, Coues's Flycatcher, both

collected by Mr. H. Keays for Prof. H. P. Attwater, in Yavapai Co., Arizona. Skins and nests accompanied both sets of eggs.

Dendroica graciae. Nest placed on limb of pine tree sixty feet from the ground. Nest very compact; outside diameter 3 in. by $1\frac{1}{2}$ in. high; inside diameter $1\frac{3}{4}$ in. by $1\frac{1}{4}$ in. deep. The body of this nest is composed of horse-hair, strings and vegetable fibres. The most abundant vegetable material interwoven consists of the staminate catkins and bud scales of *Quercus emoryi*. There is also some wool, vegetable down, and insect webbing, in which are entangled the exuviae of some caterpillar. Attached on the outside was a small staminate cone of a species of *Pinus*. Nest well lined with feathers and horse-hair. The three eggs were well incubated. Their ground color is creamy white, marked over entire surface, but more heavily at larger end, where they form a wreath, with light umber and an occasional speck of dark chestnut; lilac shell markings at larger end only. Measurements, .51X.70, .50X.69, .50X.68 in.; average, .50X.69. Collected June 23, 1890.

Contopus pertinax. The nest, placed on an oak limb twenty feet from ground, is compact, and reminds one of the nest of our *C. virens*, excepting in size. Outside diameter 5 in. by 2 in. high; inside diameter 3 in. by 1 in. deep. The body of the nest seems to consist of the web of some spider intermingled with the exuviae of some insect, fragments of insects, and vegetable matter, such as staminate catkins of *Quercus emoryi* and a pod of *Hosackia*, some leaves of *Quercus emoryi* and *Q. undulata*. The interior of the nest is made up of grasses, principally of two species of *Poa*, also some fragments of a *Bouteloua* and a *Stipa*. The eggs, three in number, were slightly incubated. The ground color is creamy-buff, spotted in a ring round larger end with chestnut and lilac-gray. Measurements, .63X.86, .62X.83, .61X.83 in.; average, .62X.84. Collected June 17, 1890. I am greatly indebted to Messrs. Wm. Brewster of Cambridge, Mass., Josiah Hoopes of West Chester, Pa., and John M. Holzinger of Washington, D. C., for the identification of the above skins and nesting material. — SAMUEL B. LADD, *West Chester, Pa.*

A Female *Piranga rubra* Assuming the Plumage of the Male. On the 27th of May of the present year my son Percy W. Shufeldt collected at Takoma Park, in Montgomery County, Maryland, a female Summer Tanager having a plumage so unusual that a record of it would seem worthy of presentation. The species is by no means uncommon in the locality where it was taken, and the specimen is apparently an adult, of several years of age. In coloration her plumage about corresponds with that of a young male of this species during the first summer, or an adult female with the following differences;—the plumage of the upper parts is thickly interspersed with the dark red feathers which characterize the male, and the plumage of the entire under parts is thickly beset with bright vermillion-tinted feathers. Many of the secondaries of the wings are also bright red, as is also the outer tail-feather of the left side. I personally examined the sex of this specimen on dissection, and found her ovary to

contain ova varying in size from a No. 10 shot to that of a small pea. The skin of this bird is at present in my son's collection.—*Dr. R. W. Shufeldt, Smithsonian Institution, Washington, D. C.*

Capture of *Geothlypis poliocephala palpebralis* in Cameron County, Texas—Recently Mr. Charles K. Worthen of Warsaw, Illinois, sent me for identification a specimen of *Geothlypis poliocephala palpebralis* (Ridgw.), an adult male, taken by one of his collectors at Brownsville, Cameron County, Texas, June 8, 1890. On my questioning the correctness of the alleged locality, Mr. Worthen made special inquiries respecting the capture of this specimen, and writes me that his collector assures him the specimen "was taken in Brownsville, Texas." It being the first one he had seen, he sent it to Mr. Worthen for identification. This specimen is now in Mr. Worthen's collection.

This forms the first record of the species for the United States. Mr. George B. Sennett, however, has in his collection a single specimen from Aldema, Tamaulipas, Mexico, collected June 13, 1888. These specimens are both referable to the form Mr. Ridgway has recognized as *Geothlypis palpebralis* (Man. N. Am. Birds, 1887, p. 526),—one of the several closely allied forms of the *G. poliocephala* group.—J. A. ALLEN, *Am. Mus. Nat. Hist., New York City.*

Bachman's Warbler (*Helminthophila bachmani*) at Raleigh, N. C.—On April 27, 1891, while walking near a small woodland stream I heard the note of a Warbler unfamiliar to me but which reminded me of the song of the Parula without the rise at the end. The sound came apparently from the low bushes in the brook, but I could see no bird. I followed the sound up the brook till I reached a thicket at its head, where I waited. On hearing the notes again I crossed the brook and found the bird was in the woods in front of me. In a few seconds I saw a bird with a black throat about 15 ft. from the ground in the lower limbs of a small oak, and immediately after collected my first Bachman's Warbler. While in the oak the bird suggested *Dendroica virens*, but the song prevented my mistaking it for that species.

This specimen was apparently in breeding condition as the testes measured $5\frac{1}{2}$ by $4\frac{1}{2}$ mm., but I could detect no other birds with it, except a pair of Bluegray Gnatcatchers which were building near the same brook.

On May 22, I took my second specimen of this species, in a woodland thicket on the edge of Walnut Creek, within a few feet of where the above mentioned brook flows into the creek. I may here mention that since killing the first specimen I had on three occasions followed and killed Wormeating Warblers, on account of the similarity of their song to that of Bachman's Warbler. When the song of Bachman's Warbler fell on my ears on this second occasion, I remarked to my brother, who was with me, "I hear a Warbler singing that is either a Wormeater or a Bachman's." I followed the notes up the creek till at last I caught sight of a bird with a black throat in a small birch and immediately shot it. Another bird flew

chipping into another birch and also fell a victim, but this was only a male Prairie Warbler, and not the mate of my Bachman's. This Bachman's was also a male, the testes measuring $6\frac{1}{2} \times 4\frac{1}{2}$ mm. The song, as in the previous instance, seemed to come from the low bushes near the ground, while the bird was ten feet from the ground when shot.

These two captures, I believe, extend the range of Bachman's Warbler considerably further north than was previously known, and make it probable that it breeds not far from here, though perhaps not in this immediate vicinity. I may add, that I have searched for this species with great care since capturing my first specimen but without any success except on the second occasion of its capture and then I wasn't looking for it.—C. S. BRIMLEY, *Raleigh, N. C.*

Note on *Mimocichla verrillorum*.—In the last number of 'The Auk' (VIII, p. 217) I described what was supposed to be a new species of *Mimocichla* from the Island of Dominica, and assumed it to be the first record of the genus for the Lesser Antilles. For the time being I had forgotten a recent paper by Dr. P. L. Sclater (P. Z. S., 1889, p. 326), giving a list of the birds of Dominica, and recording therefrom a form of *Mimocichla*, called by him *M. ardesiaca albiventris*. I was unfortunately not reminded of this paper till after the publication of my own, otherwise I should doubtless have adopted Mr. Sclater's name for the species in question, although he failed to point out some of the principal differences distinguishing this form from its allies. Mr. Sclater says: "As might have been expected, the Dominican *Mimocichla* belongs to the Porto Rican form. It is, in fact, so nearly similar that I do not see sufficient grounds for making it specifically distinct. The only difference apparent is the much greater whiteness of the belly in the Dominican species, whence those who adopt trinomials would, no doubt, call it *Mimocichla ardesiaca albiventris*." As in a later reference to it in the same paper he says: "Besides these there are two peculiar subspecies, namely *Mimocichla ardesiaca albiventris*," etc., he evidently intended to recognize it as a subspecies. As the name *albiventris* has priority by several months over *verrillorum* the species will stand as *Mimocichla albiventris* (Scl.), on the basis of the characters given in my former paper.—J. A. ALLEN, *Am. Mus. Nat. Hist., New York City.*

The Robin Wintering at Godbout, Quebec.—I desire to place on record what is to us here a most unusual occurrence, viz., the wintering of the Robin (*Merula migratoria*) on the north shore of the St. Lawrence. On looking over my notes on the species, extending over twelve years, I find that the latest bird previously seen was noted on December 5; other years from 25th to 30th November. Arrivals in the spring have been noted from April 18 to May 6. This year I kept recording their occurrence day after day, always expecting that it was going to be the last seen, but they are here still (Feb. 4, 1891), and intend to stay I believe. Every day when the tide falls, leaving the rocks or some shoals bare, they flock to

these places in hundreds for the purpose of picking up gravel and small shells; when these places are covered with ice, as often happens, they hop about from one piece of ice to another, following the shore line, evidently thinking (if birds can think) there must be something wrong. I have shot several from time to time to see what their crops contained, and invariably found in them small shells, principally minute, blackish whelks, gravel, and the fruit of the mountain ash, and sometimes bits of seaweed.

All the birds I shot were in first rate condition. The winter has been a very severe one - Feb. 2 and 3, 24 and 32 degrees below zero (Fahrenheit) - but this does not seem to trouble them at all. The reason for their wintering here is possibly due to the enormous crop of mountain ash berries. - NAP. A. COMEAU, *Godbout, Province of Quebec.*

On Two Birds New to Louisiana. - In a small collection of birds recently purchased from C. S. Galbraith by the American Museum of Natural History, are two species which have not been before recorded from Louisiana; they are:—

Helminthophila leucobronchialis.—(Am. Mus. No. 54815, Mandeville, La., Spring of 1891. Collector C. S. Galbraith. Sex not determined but the example is evidently a male.) So far as pattern of marking is concerned this specimen agrees with *Helminthophila pinus*. In coloration it is midway between *pinus* and typical *leucobronchialis*, that is, the underparts are white with a patch of yellow on the breast and more or less of this color on the chin and abdomen, while the upper parts are bluish with a greenish wash. The tips of the wing-coverts are more heavily marked with yellow than in normal specimens of *pinus*, a fact not in strict accord with Mr. Ridgway's theory of dichromatism in this puzzling group. (Cf. Man. N. A. Birds, p. 486, footnote.) If with Mr. Ridgway we assume this specimen to be a "leuchroic" example of *pinus* we should not expect that a diminution of yellow on the abdomen and back would be attended by an increase of yellow on the wing-coverts.

Spizella pusilla arenacea. (Am. Mus. No. 54809, Mandeville, La., Winter of 1891. Collector C. S. Galbraith. Sex not determined.) A typical example of this Sparrow, in winter plumage. — FRANK M. CHAPMAN, *American Museum of Natural History, New York City.*

CORRESPONDENCE.

[Correspondents are requested to write briefly and to the point. No attention will be paid to anonymous communications.]

Florida Heron Rookeries.

TO THE EDITORS OF THE AUK:—

Dear Sirs: Appreciating as one must the notes of Mr. H. K. Jamison of Philadelphia on 'Some Rookeries on the Gulf Coast of Florida,' pub-

lished in 'The Auk' (Vol. VIII, p. 233), I think perhaps an explanation is due to that gentleman and to other readers of this journal.

All assertions are in a way, I take it, comparative, and when I wrote that "there are absolutely no Heron Rookeries on the Gulf Coast of Florida, from Anclote Keys to Cape Sable" (Auk, Vol. VII, p. 221), I was fully aware of the small isolated breeding ground recorded by Mr. Jamison, as well as of a few others of similar character, though generally smaller, along the coast in question.

But I think that if any of your readers could have accompanied me over the same ground in 1874, in 1878, or even in 1880, they would have fully concurred with me in the statement quoted by Mr. Jamison, had they traversed the ground again in the spring of 1890.

It is true that there are still small isolated colonies of Herons breeding this year on one mangrove island, and driven to another in the succeeding years. But the great Heron Rookeries of Tampa Bay, Sarasota Bay, Charlotte Harbor, and the Thousand Islands, where the countless myriads of Herons were so noticeable a feature in the landscape as to attract the attention of *any one* from a long distance, no longer exist.

Not the three hundred nests that Mr. Jamison speaks of, but many, many *thousands* of nests composed such rookeries, and he would have patience indeed who could count the nests in a single acre of the two hundred acres, or thereabouts, that are included in the single rookery known as late as 1878 as 'Maximo Rookery,' just west of and near the end of Point Pinnellas at the mouth of Tampa Bay. At the same time in Charlotte Harbor there were at least five great rookeries of about equal size that I knew from personal observation. So, when I pass over this same ground now and find only here and there a few birds together, I feel I am justified in the view expressed in 'The Auk' and quoted by Mr. Jamison.

Very truly,

58 William St., New York City.

W. E. D. SCOTT.

'Birds of Greenland.'

TO THE EDITORS OF THE AUK.

Dear Sirs:—I wish to make a few statements relating to the just issued 'Birds of Greenland' by M. Chamberlain and myself. By correspondence with Mr. Herlup Winge of the Zoölogical Museum of Copenhagen I learn that two of the birds enumerated in the book are to be omitted. I here cite a letter of Mr. Winge:—

"At least two species should be omitted: (1) *Sterna hirundo* (*fluviatilis* Naum). The insertion of this species must be due to misinterpretation of synonyms. Only one species of Tern, the Arctic Tern (*Sterna macrura* or *S. paradisica*) being known from Greenland.

(2) *Empidonax pusillus*. The *Empidonax* from Greenland in the Zoological Museum of Copenhagen was wrongly entered by Reinhardt as *E. pusillus*; it is *E. flaviventris*, also later found in Greenland by Mr. Kumlien. Reinhardt himself detected the error and labelled the specimen correctly."

The Museum of Copenhagen has received from Greenland specimens of five species hitherto not known as Greenland birds. Mr. Winge gives their names as follows:—*Coccyzus americanus*, *Scolecophagus carolinus*, *Dendroica maculosa*, *Dendroica pensylvanica*, and *Seturus noveboracensis*.

As the Museum intends in two years or so (when the Danish expedition, which now goes to explore the east coast of Greenland, has come back) to publish a treatise on Greenland birds, Mr. Winge wished that the dates about these species should first be made known through this treatise, so I must regret my inability to give them here.

Holboel mentions that he sent to the Museum of Copenhagen a skin of *Somateria*, which I supposed to be a *Somateria V-nigra*, but Mr. Winge informs me that the Museum is not in possession of a Greenland skin of *Somateria*, which can be interpreted as *Somateria V-nigra*, which thus becomes still more problematic as a Greenland species.

I have just received a lot of Greenland bird-skins and eggs from Fredrikshaab (in lat. 62°). Of eleven skins of Gyrfalcon six are white and five gray. Two of the gray birds were shot in October, 1889, and two of the white ones in the same month; three white ones in December, 1889; the rest are unlabelled. One of the gray Falcons is so dark that it in my opinion must be a *Falco rusticolus obsoletus*. Perhaps the whole scale of color is found in Greenland.

Of seven skins of *Gavia alba*, four adults (two males and two females), were shot 26 Feb., 1890; an old male 18 April, 1890, and a young male 24 Nov., 1889. With them was a skin of *Zema sabinii*.

ANDREAS T. HAGERUP.

Viborg, Denmark.

NOTES AND NEWS.

THE PLATE of the Eared Whip-poor-will (*Otophanes mcleodii* Brewster) accompanying this number of 'The Auk' is the first of a series of colored plates illustrating birds recently described from Mexico by Mr. Brewster. The second of the series, illustrating two species of *Megascops*, will appear in the October number. Later appropriate text will be furnished to accompany the plates. The Eared Whip-poor-will was described in 'The Auk,' Vol. V, 1888, p. 89, from a specimen collected by Mr. R. R. McLeod, in the Sierra Madre of Chihuahua, Mexico, Dec. 6, 1884. The characters of this peculiar bird have been faithfully portrayed by Mr. Ridgway. The type remains unique.

JOHN C. CAHOON, widely known as a field naturalist, and an energetic, expert, and conscientious collector, met his death at Curslet, Newfoundland, April 26, by a fall from a cliff, while collecting, to the rocks, seventy

feet below. Mr. Cahoon was born at Harwich, Mass., September 6, 1863, and for the last seven or eight years has been what may be termed a professional ornithological collector. Besides collecting extensively on Cape Cod, and at various points on the Massachusetts coast, he passed one season on the Gulf Coast of Florida, and has made various trips to Newfoundland. One of his most important expeditions was a trip to Arizona and Sonora in the interest of Mr. Brewster, where he spent six months, mostly in the remote and dangerous part of the mountain region of Sonora. He returned with a collection of over twelve hundred specimens, including representatives of a number of new species and subspecies, several of which Mr. Brewster named in his honor. Mr. Cahoon was widely known among ornithologists, by whom he was greatly respected for his energy, industry and skill as a collector and his keenness and intelligence as an observer. The news of his sad ending was a painful shock to his many friends.

MESSRS. H. Y. BENEDICT and Charles D. Oldright, of the University of Texas, Austin, Texas, are engaged upon a 'Catalogue of the Birds of Texas.' They intend to make it as complete a list as possible of the avifauna of this great State. In addition to their own work they are promised the aid of prominent Texan ornithologists. They will make use also of the published works and papers bearing on the subject. It is their intention to give a brief account of bird distribution in the State, in relation to topographic and climatic conditions, the State including several very distinct regions. Considering the extent of the area, and the large number of species represented in the State, they find the material for such a work scanty, and earnestly request the co-operation of all persons who have original and unpublished matter in their possession. The work will close with a bibliography of Texan ornithology.

ON JUNE 6 the whaling steamer 'Kite' sailed from New York for Greenland, having on board two exploring parties, bound respectively for North and West Greenland. The first of these parties, under command of Lieut. Peary, will land at Whale Sound, latitude $77^{\circ} 30'$ north, near which they will pass the remainder of the present season, exploring the immediate region and laying in a winter's supply of meat. Early in the spring the party set out for the exploration of North Greenland. Mr. Langdon Gibson, of Flushing, Long Island, an Associate Member of the A. O. U., accompanies the expedition as ornithologist. The West Greenland party, under Prof. A. Heilprin, will be accompanied by Prof. W. E. Hughes as ornithologist. This party, working southward from Whale Sound to Upernavik or Disco Bay and Godhaven, will return early in September.

THE DEATH VALLEY Biological Expedition, under Dr. C. Hart Merriam, mentioned in the January number of 'The Auk' (p. 122), has met with ex-

cellent success in its work, thousands of specimens having been transmitted to Washington. The exploration of Death Valley proper having been completed the work has been extended to neighboring points, Dr. Merriam himself making an extended reconnoissance across Arizona, southern Utah and Nevada. The party has recently been joined by Mr. Basil H. Dutcher of New York City.

IN THE January 'Auk' (p. 123) reference was made to a proposed investigation of the North American forms of the genus *Colaptes*, by Mr. J. A. Allen. It is Mr. Allen's intention to begin his study of the group at once, and to present the results in a paper to be read before the next Congress of the A. O. U. Considerable material has been received and much more offered. The purpose of the present note is to inform those who are willing to send material that its prompt transmission will now be considered a great favor. As stated in the former notice, large series of specimens from the Plains westward to the Pacific, and from Manitoba and British Columbia southward into Mexico are especially desired. Specimens taken in the breeding season are especially solicited, although examples taken at any season cannot fail to be of service. The packages should be addressed to the care of the American Museum of Natural History, 77th St. and 8th Avenue, New York City.

IN DECEMBER, 1887, as the readers of 'The Auk' will remember (see Auk, IV, p. 359, V, pp. 123, 221, 336, 448), a movement for the erection of a monument to John James Audubon in Trinity Cemetery, New York City, was organized under the lead of a committee of the New York Academy of Sciences of which Professor Thomas Egleston was Chairman and Dr. N. L. Britton Secretary and Treasurer. It was estimated that a suitable monument would cost from \$6,000 to \$10,000. Appeals were made, through circulars and otherwise, to the scientific men of America and elsewhere, and especially to ornithologists, for contributions to the fund. While a few contributed promptly and liberally, there was on the whole a surprising and discouraging lack of interest in the matter, and for three years the prospect of realizing the plans of the Committee were far from hopeful. As a last resort, a direct appeal was made by the Chairman to some of the wealthy citizens of New York City; many subscriptions ranging from \$25 to \$100 each, were immediately sent in response, besides a much larger number ranging from \$5 to \$15 each. The total amount raised up to the middle of June of the present year is very nearly \$7,000, only about \$3,000 remaining to complete the sum of \$10,000. It is to be hoped that the many ornithologists who, through doubt of the feasibility of the movement or for other reasons have hitherto failed to respond, will now promptly aid in completing the now comparatively small amount lacking of the sum needed. Contributions may be sent to Mr. William Dutcher (525 Manhattan Ave., New York City), Treasurer of the A. O. U. Audubon Monument Committee, or to Professor N. L. Britton (Columbia College, New York City), Treasurer of the New York Academy Committee.



EV. ITERSON, LITH.

PETER CRUIKSHANK, PHILADELPHIA.

MEGASCOPS VINACEUS BREWST. MEGASCOPS ASPERSUS BREWST.

CHIHUAHUA SCREECH OWL.

SPOTTED SCREECH OWL.

ADULT FEMALE

ADULT FEMALE.

OLD SERIES, }
VOL. XVI }

CONTINUATION OF THE
BULLETIN OF THE NUTTALL ORNITHOLOGICAL CLUB.

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JUNE BIRDS OF CÆSAR'S HEAD, SOUTH CAROLINA.

BY LEVERETT M. LOOMIS.

THIS PAPER is supplementary to the one relating to Mt. Pinnacle and vicinity,* presenting the results of a further study of the bird fauna of the Alpine Region of South Carolina.

Of the various spurs of the Blue Ridge extending across the northern boundary of the State into the counties of Greenville, Pickens, and Oconee, Cæsar's Head, in the northwestern corner of Greenville, appeared to afford the best field for the continuance of my earlier investigations. Accordingly I visited this mountain on the 26th of May and resided there until the 4th of July, making the hotel on the summit the base of my operations. The interval of my stay covered the flood tide of the breeding season.

The altitude of Cæsar's Head is but little less than that of Mt. Pinnacle. The height of the ridge of the roof of the hotel above the average sea level is given as 3118 feet by the U. S. Coast and Geodetic Survey. The highest point is about a hundred feet higher.

Cæsar's Head on the north and east is bounded by the Middle

* Auk, Vol. VII, pp. 30-39, 124-130.

Saluda Valley—a deep, narrow gorge, rising on the farther side to the crest of the Saluda Mountains proper, along which runs the tortuous State line on a divide that a little farther on separates waters tributary to the Mississippi and the Atlantic. On the west and southwest Mather's Creek, an affluent of the South Saluda, forms a boundary. To the south the main stream, after its confluence with the creek, skirts the base of an outlying extension of the mountain. The whole eminence is about six miles in length and from one to one and a half miles in width.

The summit of Cæsar's Head is a narrow watershed, reaching northwest to the North Carolina line near Jones's Gap, with several lateral ridges branching off in the direction of the Middle Saluda. These ridges, in turn, are cut up into numerous smaller ones by hollows, each with its brook of clear water. The minor ridges terminate in bluffs and cliffs. The intervening hollows also end abruptly, the little rills being precipitated over walls of rock. This whole region abounds in pellucid streamlets and springs of cold water, one of the latter being far-famed as the 'cold spring.' On the top of the lateral ridges there is much fairly even ground—several hundred acres at least.

The ascent to the hotel from the south side is made by means of the Cæsar's Head Turnpike, which winds upward for about six miles. The summit gained, the road pursues the main ridge, finally crossing the Middle Saluda and joining the Jones's Gap Turnpike, which follows the course of the stream from the country below, entering North Carolina through Jones's Gap. In riding over this ridge road—a verdant arcade in the summer season—the traveler does not realize that he is on the summit of a mountain except at a single point where a ravine, leading up from the Middle Saluda, cuts deep into the backbone of the ridge, opening a vista into the valley, and revealing the ranges beyond. To the northward of Cæsar's Head mountains succeed mountains as far as the eye can reach, but to the southward the landscape of the lower country is overlooked, presenting a widespread panorama of woods and fields, fading away into the hazy blue of the distant horizon.

The name, Cæsar's Head, has its origin in a fancied resemblance to a human face, in profile, of a crag (the Head) facing to the southward on the highest point. Table Rock and Mt. Pinnacle stand out boldly to the southwest. The distance—air

measurement—to the precipice on the former is said to be but five and a quarter miles, though quite a day's journey by mountain roads. At the foot of the Head are the Dismal Mountains, or Dismals—ridges in a sort of basin, surrounded on all sides by mountains, except the south, where Mather's Creek escapes to join the South Saluda. Owing to its sheltered situation and southern exposure the place is noted for being the warmest spot about the mountains. In cold weather it is a favorite resort for cattle.

The mountains of this immediate region are forest-clad from base to summit. The growth is almost entirely deciduous. At the top of Cæsar's Head, particularly on the ridges, the trees do not attain great size. On the sides, however, there is much fine timber. The chestnut is perhaps the most characteristic tree of the region. Toward the end of June it was in full bloom, and a fair idea of its abundance could be had from the overlooking heights—the patches of yellowish appearing in marked contrast with the dark green of the other foliage. On the Middle Saluda there are considerable groups of hemlocks, but only an occasional one is to be found in the hollows at the summit. Unlike the rare *Tsuga caroliniana*, it is confined to the streams. The former occurred on two of the cliffs growing in the scanty soil on the very verge. On the summit the kalmia was in full bloom on my arrival, but the rhododendron did not blossom until nearly a month later, though in flower at the foot. Huckleberries, which abound on many of the ridges, began to ripen after the middle of June. Owing to the custom of periodically burning off these mountains to afford range for stock to the settlements below, the woods in many places present a park-like appearance, often so free from undergrowth as to suggest their having been thinned by the axe. That the pasturage is good is abundantly shown in the sleek red cattle, their Devon ancestry being apparent at a glance. There are only a few clearings—little patches, now or formerly tilled, in miles of unbroken forest. Around the hotel there are about twenty acres of open ground, in lawn, garden, and pasture. The hotel was established in 1837, and has since been the most noted mountain resort in the State.

Of the collateral fauna I have little of relevance to record. The chickaree, known hereabouts as the 'mountain boomer, was not met with, and my inquiries with regard to it uni-

versally elicited the information that it was restricted to the higher mountains some distance on the other side of the line. In the 'catamount,' which was said to be of rare occurrence, was recognized the Canada lynx. The ground squirrel was abundant and generally distributed. The ground hog was not seen, but it was stated to be common. Judging from my own experience, the rattlesnake is one of the most numerous of the Ophidia of the locality. In the Middle Saluda and Mather's Creek speckled trout were abundant—one fisherman taking twenty-nine in a single afternoon at the end of June.

The first four weeks of my sojourn it rained somewhere in the vicinity every day. Over a week of the time the mountains were constantly enveloped in clouds. Notwithstanding the unpropitious state of the weather I was out every day, extending my observations for several miles in various directions, and down to about 2000 feet on the Middle Saluda and Mather's Creek. In working from the top downward an opposite method was pursued from that followed at Mt. Pinnacle. Owing to the more table-like character of the summits and the consequent better opportunities for observation, and also to the near proximity of my former work, it was deemed best to restrict my efforts to the zone above mid-elevation. It should be borne in mind therefore that the notes which follow relate only to the belt above 2000 feet, particularly to the summit. Where simply corroborative of the former article the annotations have been abridged in order not to consume unnecessary space. The lack of open ground accounts for the absence of field birds irrespective of climatic or other conditions.

1. *Colinus virginianus*. BOB-WHITE. 'PARTRIDGE.'—Common in the open park-like woods and about the little clearings. Before the arrival of the summer guests their call-notes were heard frequently from the lawn close by the hotel piazza.

2. *Bonasa umbellus*. RUFFED GROUSE. 'PHEASANT.'—While these birds are really common in these mountains, yet, from the nature of their haunts in the early summer season, they readily escape observation. Unless the dense undergrowth bordering the branches in the hollows and the swampy thickets at the heads of the larger streams be diligently hunted, several weeks might be spent rambling about the mountains without a single Pheasant being encountered. They lie so closely, too, that without a dog, even in these retreats, many would be passed unno-

ticed. One day two were flushed from a cluster of rhododendrons within twenty steps of an open spot where I had been resting under a tree, from which a Towhee had been shot a few minutes before. The report of the gun had been unheeded, the birds rising only when I started in their direction in pursuit of a Chestnut-sided Warbler. It is well-nigh impossible to get a shot in the places they frequent unless one is ready to press the trigger the instant they are a-wing. By the end of June they seemed to become more generally distributed, solitary birds being found on the ridges. Emancipation from the care of the nest and the tempting flavor of the ripening huckleberries doubtless encourage wider dispersion, at least on the part of the old males. Young, as large as Bob-whites and under the care of the parent birds, were noted by the middle of June. I did not hear the 'drumming' of the males during the time of my stay. A gentleman, stopping at the hotel, informed me of the presence and occasional capture of this species in the 'flat woods' of Abbeville County. Its range in the Piedmont Region appears to be nearly or quite coextensive with that of the ground squirrel.

3. *Meleagris gallopavo*. WILD TURKEY.—But few 'turkey signs' were seen. From what was learned, it appears that their bands are considerably thinned. I was told of one hunter who had taken thirty the past season, and of another who had secured five at one fire. Bating a trench is said to be the favorite method for their extermination.

4. *Cathartes aura*. TURKEY VULTURE. 'BUZZARD.'—Individuals observed daily soaring over the mountain tops.

5. *Buteo borealis*. RED-TAILED HAWK.—Tolerably common. The Duck Hawk, or 'Squirrel Hawk' as locally called, is reported to breed commonly, a pair at one time having a nest in the cliff at the Head. The Bald Eagle was also mentioned as occurring. As almost my entire time was spent in woods where there was no opportunity for outlook, but scanty knowledge was gained of the Falconidae.

6. *Coccyzus americanus*. YELLOW-BILLED CUCKOO. 'RAIN CROW.'—Found about the hotel and elsewhere at the summits, but it was apparently not very common at these highest altitudes.

7. *Ceryle alcyon*. BELTED KINGFISHER.—Only upon one occasion was the Kingfisher's rattle heard, June 12, in the valley of the Middle Saluda from a cliff above.

8. *Dryobates villosus audubonii*. SOUTHERN HAIRY WOODPECKER.—While not strictly typical, the specimens taken are nearer *audubonii* than *villosus*, and in consequence the Hairy Woodpecker of the crest of the mountains is referred to the subspecific form. This Woodpecker is rather common.

9. *Dryobates pubescens*. DOWNY WOODPECKER.—This species was the commonest member of the family met with.

10. *Ceophlæus pileatus*. PILEATED WOODPECKER. 'WOOD HEN.'—Common, and unusually tame. Sometimes one would alight quietly on the trunk of a tree within twenty yards of a place where I would be sitting, and peer cautiously from the further side very much as the inquisitive Red-head does, though without the latter's volubility.

11. *Colaptes auratus*. FLICKER.—Only a few were observed, these about the clearings and in the open woods.

12. *Chætura pelagica*. CHIMNEY SWIFT.—Every day they were seen about the openings and above the tree tops of the unbroken forest.

13. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD. 'HUMMINGBIRD'.—Common, alike in the dark, heavily-wooded ravines and on the sunny ridges about the hotel.

14. *Myiarchus crinitus*. CRESTED FLYCATCHER.—Preferred the more open places in the woods. Common.

15. *Sayornis phœbe*. PHŒBE. 'GNATCATCHER'.—A pair had a nest containing eggs over a door in one of the hotel piazzas on my arrival, May 26. I was told that a brood had already been reared by these birds, and that the nesting site was one that had been used for a number of years. At the summits this species was found only in situations exposed to the sun, as about the cliffs and in the little fields.

16. *Contopus virens*. WOOD PEWEE.—The Wood Pewee was one of the commoner birds of the locality. Young-of-the-year, strong of wing, were noted from the outset.

17. *Empidonax acadicus*. ACADIAN FLYCATCHER.—The altitude of about 2500 feet appeared to limit their vertical range. Along the Middle Saluda they were common; this stream affording an avenue from the foot of the mountains.

18. *Cyanocitta cristata*. BLUE JAY.—Rather irregularly distributed and not very common.

19. *Corvus corax*——. RAVEN.—The croak of the Raven is a familiar sound at the crest of these mountains, a day scarcely passing without one or more being seen or heard. The cliffs on Cæsar's Head and the neighboring heights are said to be nesting places. Their attachment to one of these inaccessible crags as a breeding-place has given the name Raven Cliff Falls to a beautiful cascade, where a tributary of the South Saluda makes its descent into the Dismal Mountains. In May a pair continually harassed the turkeys at the hotel, robbing their nests of eggs, and later preying upon the young. The coming of the summer visitors caused them to give the hotel and its immediate surroundings a wider berth. A narrow 'leading' ridge, however, near by, separating two deep valleys, continued a favorite crossing-point, and a stand taken there and patient watching would certainly have been rewarded by a fair shot, but the necessary time could not be spared from other field work, which is to be regretted, as the subspecific status of the Raven of the Carolina mountains yet remains a mooted point.

20. *Corvus americanus*. AMERICAN CROW.—The crow was not common. The presence of the Raven and the absence of open ground probably account for its scarcity.

21. *Spinus tristis*. AMERICAN GOLDFINCH. 'LETTUCE-BIRD'.—Frequented chiefly the clearings and the open woodlands, where they were tolerably common.

22. *Spizella socialis*. CHIPPING SPARROW.—Shunned the densely wooded situations, but were common elsewhere.

23. *Spizella pusilla*. FIELD SPARROW.—There was not enough unwooded ground to render them abundant, but every cleared or partially cleared spot was occupied by these persistent songsters. Their notes were mainly normal. After nightfall an occasional song broke the stillness.

24. *Pipilo erythrophthalmus*. TOWHEE. 'JOE-REE.'—The song of the Towhee was one of the most characteristic in the chorus of bird voices about the hotel grounds. To the close of my stay they sang with unabated energy. They were decidedly common, being generally distributed on the edges of the openings and in the scrubby undergrowth among scattered trees. One was shot on the rocks at the 'head' and fluttered over the cliff. Young birds well able to fly were abroad on my arrival. A second brood appears to be habitually reared. One of the specimens procured exhibited a tendency to albinism in numerous white feathers on the occiput and the back and side of the neck.

25. *Cardinalis cardinalis*. CARDINAL. 'REDBIRD.'—Rather common, particularly about the streams. Its clear and inspiring whistle frequently greeted the ear from the trees on the lawn. Its occurrence above 3000 feet extends its vertical range at least 500 feet higher than recorded at Mt. Pinnacle.

26. *Passerina cyanea*. INDIGO BUNTING.—Like a number of other species, this bird principally affected the openings and locations where the timber was sparse. It was common.

27. *Piranga erythromelas*. SCARLET TANAGER.—Except on the ridges leading northeast from the hotel, the Scarlet Tanager was everywhere common. Curiously enough these ridges seemed to be avoided, though without apparent reason. The males continued to sing, with undiminished fervor, up to the day of my departure. They were very shy at first, but as the season advanced they grew tamer. Golden Weaver is their local name, an appellation more appropriate to the Baltimore Oriole.

As at Mt. Pinnacle, the Summer Tanager was not met with at the higher elevations.

28. *Ampelis cedrorum*. CEDAR WAXWING.—A male was secured from a company of half-a-dozen at the headwaters of a branch of the South Saluda, June 22. Four days later two other males and a female were obtained from another little band on the Middle Saluda near its source.

29. *Vireo olivaceus*. RED-EYED VIREO.—Of all the feathered tenants of these mountain forests, this one, by far, was the most abundant. In the persistency of its vocal efforts it scarcely had a rival.

30. *Vireo flavifrons*. YELLOW-THROATED VIREO.—At the higher elevations, uncommon. One sang at times through June from the shade-trees within the hotel inclosure.

31. *Vireo solitarius alticola*. MOUNTAIN SOLITARY VIREO.—In the territory under consideration, this Vireo, in its typical form, was common and evenly distributed. It was found both in the ravines and on the ridges, and in shaded situations as well as sparsely wooded ones. Evergreen and deciduous trees were alike frequented. The males were con-

spicious songsters. With the progress of June the season of song considerably waned, much of their singing being fitful. A musical contest, between two rivals, June 27, was not wanting, however, in the early vigor. The song varied in individuals, the more gifted performers excelling in the variety of their notes. An air of entire absorption characterizes the execution of these sedate musicians. They often appear to be oblivious of the presence of a listener—seemingly lost in the ecstasy of their own vocalization. The minor notes are peculiar—those of the young, which are uttered incessantly when the parents are taken, being striking and indescribable sounds. It was noticed that the males frequently began to sing when their haunts were invaded, and that they occupied the most exposed perches, usually dead limbs, and seemed anxious to attract attention to themselves and to decoy the intruder away from the spot. The female and the young, for family groups were large the first week of June, in the meantime would keep concealed in the thick foliage, eluding casual observation. Sometimes the report of the gun or the ruse of sucking the back of the hand would start the males to singing. As a rule this *Vireo* is confiding rather than shy. One bird—about a fortnight from the nest—was so unsophisticated as to come within touch of my gun, and peer curiously for several moments, until frightened away, at the strange object that had so suddenly appeared. Birds-of-the-year with fully developed wings were shot on the 9th of June. But a single brood appears ordinarily to be raised, for the organs of reproduction displayed constant degeneration from the outset.

The assertions previously made (*Auk*, Vol. VII, p. 126; VIII, 169) as to the coloration of the upper parts and the dark color, in adults, of the under mandible are fully sustained in a supplementary series of twenty-nine specimens—twenty-two males, three females, four hornotines. Fresh colors of the lower mandibles of these examples, recorded in the field, are as follows: 'plumbeous-black,' (ad. ♂); 'plumbeous-black, base with stronger indications of plumbeous' (ad. ♀); 'plumbeous, blackening at tip' (♂, ♀ juv.).

DIMENSIONS (in inches).

<i>Sex</i>	<i>Length</i>	<i>Extent</i>	<i>Chord of Wing</i>	<i>Chord of Exp. Culmen</i>
♂	6.00	10.10	3.22	.47
♂	5.95	10.00	3.16	.47
♂	5.95	10.00	3.15	.47
♂	5.95	9.80	3.12	.47
♂	5.95	9.80	3.10	.48
♂	5.90	10.00	3.18	.44
♂	5.90	10.00	3.15	.44
♂	5.90	9.80	3.10	.47
♂	5.90	9.80	3.09	.46
♂	5.90	9.80	3.05	.47
♂	5.90	9.80	3.04	.43
♂	5.85	9.70	3.05	.43

Sex	Length	Extent	Chord of Wing	Chord of Exp. Culmen
♂	5.80	10.00	3.17	.47
♂	5.80	9.90	3.15	.44
♂	5.80	9.90	3.14	.46
♂	5.80	9.90	3.12	.45
♂	5.80	9.90	3.10	.49
♂	5.80	9.50	2.98	.47
♂	5.75	9.90	3.13	.44
♂	5.70	10.00	3.18	.44
♂	5.70	9.80	3.11	.43
♂	5.65	9.60	3.01	.43
♀	5.95	10.00	3.16	.44
♀	5.90	9.80	3.10	.43
♀	5.65	9.70	3.05	

32. *Mniotilta varia*. BLACK-AND-WHITE WARBLER.—A very common inhabitant of these mountains.

33. *Helminthus vermivorus*. WORM-EATING WARBLER.—Along the branches and on the shady hillsides and ridges, very common. Young, hardly able to fly, were noted as late as the 29th of June. The males sang on into July.

34. *Helminthophila chrysoptera*. GOLDEN-WINGED WARBLER.—Detected only at the head of the Middle Saluda where it crosses the Cæsar's Head Turnpike, at an altitude of about 2500 feet. Here a colony had been established in a sunny spot among the rhododendrons and kalmias fringing the stream and on the adjoining bush-grown hillside. Young birds were caught in the hand June 19.

35. *Compsothlypis americana*. PARULA WARBLER.—Though not as abundant as at the lower elevations, still it was common. Confined to the hollows.

36. *Dendroica pensylvanica*. CHESTNUT-SIDED WARBLER.—This Warbler is very common in this locality. It haunts the shrubbery of the streams, especially in the neighborhood of borders having sun exposure. Several pairs made their home in a little dell at the foot of the hotel lawn, where a number of bold springs mingled their cold rock waters in a quiet brooklet that meandered through rhododendron shades until it leaped into the sunlight over a crag to the valley below. The young were on wing the second week of June. There was no pause in the song season.

37. *Dendroica virens*. BLACK-THROATED GREEN WARBLER.—JUNE 3 I followed one of the long wooded ridges extending northeast from the hotel to a cliff overlooking the valley of the Middle Saluda. As I stood on this rocky bluff, the songs of several Black-throated Green Warblers, rising above the sound of falling water, came from the billowy green a thousand feet below. This was the first intimation I had of the presence of this bird, for a week spent in exploring the ground nearest to the hotel had not revealed it. Several excursions were made into this valley, and these Warblers were found to be common along the main stream and its tribu-

taries at an elevation of about 2000 feet. Stragglers were observed several hundred feet higher. Nowhere else were they met with except at about the same altitude on Mather's Creek. It is remarkable that this bird should shun the higher ground, and occur only on the water courses leading up from the country below. This peculiar distribution is not to be explained on the score of temperature; for the cool deep gorge on the north side differed widely in this respect from the hot cove, walled in on every hand, except the south, by precipitous mountains. Neither does this restriction of range appear to be accounted for by floral considerations; as this species was not found among the hemlocks toward the source of the Middle Saluda, nor was it limited to the places where these evergreens most abound. All this witnesses that the boreal character of the fauna of this region is imparted by the combined influence of the mountains and not by mere vertical position on the peaks and ridges; and that this paramount influence is modified, as where latitude is involved, by auxiliary agencies, the result being local distribution. They were exceedingly shy. The testes of a male examined June 17 were fully developed. Their singing suffered no abatement during the interval of my sojourn.

38. *Dendroica vigorsii*. PINE WARBLER.—Two males, in full song, were noted June 29 on a piny ridge between the Dismals and South Saluda well up to 3000 feet. This was the only locality visited where there were other than isolated pines. The occurrence of this evergreen in bodies appears to determine the upward range of this Warbler, which affords a striking exemplification of floral influence upon local distribution.

39. *Seiurus aurocapillus*. OVEN-BIRD.—Abundant on the ridges and hillsides. Young were well on wing June 10. By the second week of June there began to be a falling off in song, though the voices of the singers remained strong to the last.

40. *Seiurus motacilla*. LOUISIANA WATER-THRUSH.—Not as plentiful on these summits as at the lower levels on Mt. Pinnacle. The adults apparently migrated about the middle of June.

41. *Geothlypis formosa*. KENTUCKY WARBLER.—An abundant bird of the spring branches and larger streams. In the 'Observations' upon the summer mountain birds of Pickens (Auk, Vol. VII, p. 129) a nuptial song was spoken of. This was heard a number of times the past season, thrice one cloudy day at a water-fall on the Middle Saluda—the sweet wild notes rising above the fall of the water, brightening for a moment the deepened shade of the rhododendrons and hemlocks. The parents were extremely solicitous for their offspring, the sounds made by the lips on the back of the hand driving them nearly frantic with anxiety. Oven-birds were similarly affected.

42. *Icteria virens*. YELLOW-BREASTED CHAT. 'MOCKINGBIRD.'—Prominent in the vicinity of running water away from shaded situations.

43. *Sylvania mitrata*. HOODED WARBLER.—Although reaching the highest spring heads, it occurs but sparingly above 2500 feet. Common below this height on the Middle Saluda.

44. *Galeoscoptes carolinensis*. CATBIRD.—A few were met with about openings along the Cæsar's Head Turnpike in the vicinity of the Middle Saluda.

45. *Harporhynchus rufus*. BROWN THRASHER. 'THRASHER.'—Were not very common. Several pairs had their abode at the very top of the mountain about the hotel and the Head, above 3000 feet.

46. *Thryothorus ludovicianus*. CAROLINA WREN.—Universally distributed, finding congenial habitation in all sorts of locations; very common.

47. *Thryothorus bewickii*. BEWICK'S WREN.—An adult male was shot June 4, while singing, at the hotel. Two days before, at a little lower elevation over a mile away, a family group was seen at a cabin in a cultivated field. They remained on the premises to the close of my visit.

48. *Sitta carolinensis*. WHITE-BREASTED NUTHATCH.—The White-breasted Nuthatch is a common and generally distributed species throughout this region.

49. *Parus bicolor*. TUFTED TITMOUSE.—Abundant, ranging everywhere over these highlands.

50. *Parus carolinensis*. CAROLINA CHICKADEE. 'TOM-TIT.'—Rather less numerous than the Tufted Titmouse, but equally ubiquitous.

51. *Turdus mustelinus*. WOOD THRUSH. 'NIGHTINGALE.'—Common, but singularly shuns some portions of the locality. In the neighborhood of the hotel it was the leading voice in the daily concert. Rather shy.

52. *Sialia sialis*. BLUEBIRD.—Every suitable situation was occupied by one or more family gatherings.

LIST OF BIRDS COLLECTED ON THE BAHAMA ISLANDS BY THE NATURALISTS* OF THE FISH COMMISSION STEAMER *ALBATROSS*.

BY ROBERT RIDGWAY.

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I. ABACO.

1. *Mimocichla plumbea* (Linn.).—12 specimens, March 26 to April 7.

2. *Mimus polyglottos elegans* (Sharpe) †—1 specimen, March 26.

* Mr. James E. Benedict, in charge, assisted by Mr. Willard Nye, Jr., Mr. Charles W. Townsend, Mr. Thomas Lee, and Prof. L. F. Washburne.

† *Mimus elegans* Sharpe, Cat. B. Br. Mus. Vol. VI, 1881, 339. So far as the white on the primaries is concerned, this specimen is not distinguishable from true *M. polyglottos*, which is also the case with an example from Inagua, collected by Dr. Bryant. *M. elegans* cannot, therefore, if these specimens are really the same bird, be separated by the ascribed characters, even as a local race; and I have strong doubts as to its validity, unless smaller bill alone may be deemed sufficient to justify its separation.

3. *Galeoscoptes carolinensis* (Linn.).—5 specimens, March 27 to April 7.
4. *Polioptila cærulea* (Linn.).*—11 specimens, March 25 to April 6.
5. *Helmitherus vermivorus* (Gmel.).—1 specimen, March 3.
6. *Helminthophila pinus* (Linn.).—1 specimen, April 7.
7. *Dendroica tigrina* (Gmel.).—4 specimens, March 26 to April 7.
8. *Dendroica coronata* (Linn.).—2 specimens, March 2 to April 2.
9. *Dendroica vigorsii* (Aud.).—1 specimen, April 1.
10. *Dendroica discolor* (Vieill.).—6 specimens, April 2 to 7.
11. *Dendroica palmarum* (Gmel.).—1 specimen, April 2.
12. *Geothlypis trichas* (Linn.).—6 specimens, March 25 to April 12.
13. *Geothlypis tanneri* Ridgw.†—4 specimens, March 27 to April 6.
14. *Seiurus aurocapillus* (Linn.).—3 specimens, March 27 to April 13.
15. *Seiurus noveboracensis* (Gmel.).—1 specimen, April 5.
16. *Cæreba bahamensis* (Reich.).—9 specimens, March 25 to April 7.
17. *Callichelidon cyaneoviridis* (Bryant).—1 specimen, April 10.
18. *Vireo crassirostris* (Bryant).—13 specimens, March 25 to April 7.
19. *Spindalis zena townsendi* Ridgw.‡—11 specimens, March 25 to April 7.
20. *Pyrhulagra violacea* (Linn.).—8 specimens, March 26 to April 5.
21. *Euetheia bicolor* (Linn.).—3 specimens, March 26 to April 6.
22. *Ammodramus sandwichensis savanna* (Wils.).—1 specimen, April 1.
23. *Agelaius phæniceus bryanti* Ridgw.§—2 specimens, March 26 to April 5.
24. *Pitangus bahamensis* Bryant.—3 specimens, April 1 to 7.
25. *Myiarchus sagræ* (Gundl.).—7 specimens, March 25 to April 7.
26. *Contopus bahamensis* (Bryant).—1 specimen, March 27.
27. *Sporadinus ricordi* (Gerv.).—42 specimens, March 25 to April 7.
28. *Doricha evelynæ* (Bourc.).—10 specimens, March 25 to April 7.
29. *Dryobates villosus maynardi* Ridgw.||—6 specimens, March 31 to April 7.
30. *Centurus blakei* Ridgw.¶—17 specimens, March 27 to April 7.
31. *Falco columbarius* Linn.—2 specimens, April 5 to 7.
32. *Columbigallina passerina bahamensis* (Mayn.).**—3 specimens, April 3.
33. *Hæmatopus palliatus* Temm.—2 specimens, April 3.

* Some of the specimens inclining toward *P. c. cæsiogaster* (Ridgw. Man. N. Am. B. 1887, p. 569), one of them nearly typical of that form.

† Cf. The Auk, Vol. III, July, 1886, p. 335.

‡ Cf. Proc. U. S. Nat. Mus., Vol. X, 1887, p. 3.

§ Cf. Man. N. Am. B., 1887, p. 370.

|| Cf. Man. N. Am. B., 1887, 282. (*Picus insularis* Mayn., 1885, nec Gould, 1862.)

¶ Cf. The Auk, Vol. III, July, 1886, p. 337.

** *Chamæpelia bahamensis* Mayn., Am. Exchange and Mart, III, No. 6, Feb. 5, 1887, p. 69.

34. *Ardea rufescens* Gmel.—1 specimen, April 3.
35. *Ardea* 'pealei' Bonap.—2 specimens, April 3.
36. *Ardea virescens bahamensis* (Brewst.).*—1 specimen, April 3.
37. *Nycticorax nycticorax nævius* (Bodd.).—1 specimen, April 3.
38. *Fulica americana* Gmel.—1 specimen, April 3.
39. *Dafila bahamensis* (Linn.).—1 specimen, (alcoholic, no date).
40. *Phaëthon flavirostris* Brandt.—1 specimen, April 5.

II. NEW PROVIDENCE.

1. *Turdus mustelinus* Gmel.—1 specimen, April 16.
2. *Mimocichla plumbea* (Linn.).—2 specimens, March 19.
3. *Mimus gundlachi* Cab.—1 specimen, March 19.
4. *Galeoscoptes carolinensis* (Linn.).—1 specimen April 15.
5. *Polioptila cærulea cæsiogaster* Ridgw.†—6 specimens, March 19 to April 17.
6. *Mniotilta varia* (Linn.).—6 specimens, March 19 to April 16.
7. *Helmitherus vermivorus* (Gmel.).—3 specimens, March 23 to April 16.
8. *Compsothlypis americana* (Linn.).—3 specimens, April 15 and 16.
9. *Dendroica tigrina* (Gmel.).—7 specimens, March 19 to April 16.
10. *Dendroica petechia gundlachi* (Baird).—1 specimen, March 19.
11. *Dendroica cærulescens* (Linn.).—2 specimens, April 10.
12. *Dendroica striata* (Forst.).—3 specimens, April 1 to 29.
13. *Dendroica dominica* (Linn.).—1 specimen, April 15.
14. *Dendroica vigorsii* (Aud.).—2 specimens, April 17 to 19.
15. *Dendroica discolor* (Vieill.).—7 specimens, March 18 to April 16.
16. *Dendroica palmarum* (Gmel.).—8 specimens, March 19 to April 16.
17. *Geothlypis trichas* (Linn.).—4 specimens, March 19 to April 16.
18. *Geothlypis rostrata* Bryant.—1 specimen, March 19.
19. *Seiurus aurocapillus* (Linn.).—7 specimens, March 18 to April 16.
20. *Setophaga ruticilla* (Linn.).—9 specimens, March 18 to April 16.
21. *Cœreba bahamensis* (Reich.).—4 specimens, March 19 and 20.
22. *Vireo altiloquus barbatulus* (Cab.).—3 specimens, April 21 to 29.
23. *Vireo crassirostris* (Bryant).—11 specimens, March 19 to April 18.
24. *Spindalis zœna* (Linn.).—20 specimens, March 18 to April 15.
25. *Pyrhulagra violacea* (Linn.).—11 specimens, March 19 to April 16.
26. *Euethia bicolor* (Linn.).—3 specimens, March 19.
27. *Pitangus bahamensis* Bryant.—4 specimens, March 19 to April 18.
28. *Myiarchus sagræ* (Gundl.).—7 specimens, March 18 to April 16.
29. *Contopus bahamensis* (Bryant).—1 specimen, April 15.
30. *Doricha evelynæ* (Bourc.).—5 specimens, April 15.
31. *Dryobates villosus maynardi* Ridgw.—2 specimens, March 18 and 19.
32. *Crotophaga ani* Linn.—1 specimen, March 19.

* *Ardea bahamensis* Brewst., Auk, Vol. V, Jan. 1888, p. 83.

† Cf. Man. N. Am. B., 1887, p. 569.

33. *Saurothera bahamensis* Bryant.—4 specimens, March 19 to Apr. 29.
34. *Zenaida zenaida* (Bonap.).—1 specimen, April 15.

III. ELEUTHERA ISLAND.

1. *Mimocichla plumbea* (Linn.).—1 specimen, March 12.
2. *Mimus gundlachi* Cab.—6 specimens, March 18.
3. *Mniotilta varia* (Linn.).—1 specimen, March 12.
4. *Dendroica petechia gundlachi* (Baird).—1 specimen, March 12.
5. *Dendroica discolor* (Vieill.).—6 specimens, March 12.
6. *Dendroica palmarum* (Gmel.).—3 specimens, March 12.
7. *Geothlypis trichas* (Linn.).—5 specimens, March 12.
8. *Geothlypis coryi* Ridgw.*—3 specimens, March 12.
9. *Seiurus aurocapillus* (Linn.).—1 specimen, March 12.
10. *Vireo crassirostris* (Bryant).†—17 specimens, March 12.
11. *Cœreba bahamensis* (Reich.).—6 specimens, March 12.
12. *Spindalis zena* (Linn.).—9 specimens, March 12.
13. *Pyrrhulagra violacea* (Linn.).—9 specimens, March 12.
14. *Euetheia bicolor* (Linn.).—5 specimens, March 12.
15. *Contopus bahamensis* (Bryant).—1 specimen, March 12.
16. *Doricha evelynæ* (Bourc.).—2 specimens, March 12.
17. *Coccygus minor maynardi* Ridgw.—1 specimen, March 12.
18. *Columbigallina passerina bahamensis* (Mayn.).—4 specimens, March 12.

IV. CAT ISLAND.

1. *Mimus gundlachi* Cab.—4 specimens, March 11.
2. *Dendroica discolor* (Vieill.).—11 specimens, March 11.
3. *Dendroica palmarum* (Gmel.).—8 specimens, March 11.
4. *Geothlypis trichas* (Linn.).—1 specimen, March 11.
5. *Seiurus aurocapillus* (Linn.).—1 specimen, March 11.
6. *Cœreba bahamensis* (Reich.).—4 specimens, March 11.
7. *Vireo crassirostris* (Bryant).‡—6 specimens, March 11.
8. *Vireo crassirostris flavescens* Ridgw.§—2 specimens (typical), March 11.

* Cf. The Auk, Vol. III, July, 1886, p. 334.

† Many of the specimens inclining toward *V. c. flavescens* Ridgw. (Man. N. Am. B., 1887, p. 476), but none of them typical of that form.

‡ Most of these more yellowish than typical *crassirostris*.

§ Cf. Man. N. Am. B., 1887, p. 476. Mr. Cory, in the revised edition of his 'Birds of the Bahama Islands,' considers *V. c. flavescens* to be a synonym of his *V. alleni*. Of the latter (from Grand Cayman, an island on the southern side of western Cuba), I have seen but a single example, and this cannot be at all nearly matched in a series of nearly 40 specimens of *flavescens*. Should, however, a series of specimens from Grand Cayman show that *V. alleni* and *V. crassirostris flavescens* are practically the same, then *V. approximans* Ridgw. (Proc. U. S. Nat. Mus., Vol. VII, 1884, p. 179), from the island of Old Providence, in the Caribbean Sea, would also have to be considered identical, and therefore on account of its priority that name would have to be used for the yellow race of *V. crassirostris* instead of *V. alleni*.

9. *Spindalis zena* (Linn.).—5 specimens, March 11.
10. *Pyrrhulagra violacea* (Linn.).—14 specimens, March 11.
11. *Euetheia bicolor* (Linn.).—14 specimens, March 11.
12. *Passerina cyanea* (Linn.).—2 specimens, March 11.
13. *Doricha evelynæ* (Bourc.).—1 specimen, March 11.
14. *Zenaida zenaida* (Bonap.).—1 specimen, March 11.
15. *Columbigallina passerina bahamensis* (Mayn.).—1 specimen, March 11.

V. WATTLING'S ISLAND.

1. *Mimus gundlachi* Cab.—7 specimens, Feb. 27 to March 8.
2. *Margarops fuscatus* (Vicill.).—4 specimens, March 2 to 9.
3. *Mniotilta varia* (Linn.).—2 specimens, March 9.
4. *Dendroica petechia gundlachi* (Baird).—8 specimens, March 1 to 9.
5. *Dendroica cærulescens* (Linn.).—1 specimen, March 4.
6. *Dendroica discolor* (Vicill.).—13 specimens, Feb. 27 to March 9.
7. *Dendroica palmarum* (Gmel.).—4 specimens, March 2 to 4.
8. *Dendroica kirtlandi* Baird.—4 specimens, March 4 to 9.
9. *Geothlypis trichas* (Linn.).—4 specimens, March 1 to 9.
10. *Seiurus aurocapillus* (Linn.).—3 specimens, Feb. 27 to March 8.
11. *Seiurus noveboracensis* (Gmel.).—1 specimen (no date).
12. *Cœreba bahamensis* (Reich.).—12 specimens, Feb. 27 to March 9.
13. *Euetheia bicolor* (Linn.).—7 specimens, Feb. 27 to March 8.
14. *Doricha evelynæ* (Bourc.).—2 specimens, March 4.
15. *Centurus nyeanus* Ridgw.*—1 specimen, March 5.
16. *Coccyzus minor maynardi* (Ridgw.).†—2 specimens, Feb. 27 and March 4.
17. *Falco columbarius* (Linn.).—1 specimen, March 4.
18. *Zenaida zenaida* (Bonap.).—1 specimen (no date).
19. *Columbigallina passerina bahamensis* (Mayn.).—3 specimens, March 1.
20. *Arenaria interpres* (Linn.).—2 specimens, March 9.
21. *Totanus flavipes* (Gmel.).—1 specimen (no date).
22. *Ardea tricolor ruficollis* (Gosse).—3 specimens, March 1 and 2.
23. *Ardea virescens bahamensis* (Brewst.).—5 specimens, Feb. 27 to March 8.
24. *Fregata aquila* (Linn.).—1 specimen, March 6.
25. *Phalacrocorax dilophus floridanus* (Aud.).—1 specimen, March 1.
26. *Phalacrocorax mexicanus* (Brandt).—1 specimen, March 1.
27. *Aythya marila nearctica* Stejn.—1 specimen (no date).
28. *Colymbus dominicus* Linn.—1 specimen, March 2.

VI. RUM CAY.

1. *Mimus gundlachi* Cab.—11 specimens, March 1 to 29.
2. *Galeoscoptes carolinensis* (Linn.).—1 specimen, March 6.

* Cf. The Auk, Vol. III, July, 1886, p. 336.

† *Coccyzus maynardi* Ridgw. Man. N. Am. B., 1887, 274.

3. *Margarops fuscatus* (Vieill.).—10 specimens, March 1 to 6.
4. *Mniotilta varia* (Linn.).—2 specimens, March 2 to 3.
5. *Compsothlypis americana* (Linn.).—1 specimen, March 2.
6. *Dendroica tigrina* (Gmel.).—5 specimens, March 1 to 6.
7. *Dendroica petechia gundlachi* (Baird.).—34 specimens, March 1 to 6.
8. *Dendroica coronata* (Linn.).—2 specimens, March 3 and 5.
9. *Dendroica discolor* (Vieill.).—20 specimens, March 1 to 6.
10. *Dendroica palmarum* (Gmel.).—17 specimens, March 1 to 6.
11. *Geothlypis trichas* (Linn.).—10 specimens, March 2 to 6.
12. *Seiurus aurocapillus* (Linn.).—1 specimen, March 5.
13. *Cœreba bahamensis* (Reich.).—24 specimens, March 1 to 6.
14. *Vireo crassirostris flavescens* (Ridgw.).—14 specimens, March 1 to 6.
15. *Ammodramus sandwichensis savanna* (Wils.).—1 specimen, March 4.
16. *Euethia bicolor* (Linn.).—17 specimens, March 1 to 6.
17. *Doricha evelynæ* (Bourc.).—16 specimens, March 1 to 5.
18. *Sphyrapicus varius* (Linn.).—1 specimen, March 1.
19. *Crotophaga ani* Linn.—5 specimens, March 1 to 5.
20. *Coccyzus minor maynardi* Ridgw.—4 specimens, March 1 to 5.
21. *Zenaida zenaida* (Bonap.).—1 specimen (no date).
22. *Columbigallina passerina bahamensis* (Mayn.).—15 specimens, March 1 to 6.
23. *Totanus flavipes* (Gmel.).—1 specimen (no date).
24. *Ardea virescens bahamensis* (Brewst.).—3 specimens, March 1 to 3.
25. *Fulica americana* (Gmel.).—2 specimens, March 2 and 3.
26. *Aythya marila nearctica* Stejn.—1 specimen (no date).
27. *Colymbus dominicus* Linn.—2 specimens, March 2 and 3.

VII. GREEN CAY.

1. *Mimus gundlachi* Cab.—5 specimens, April 12 and 13.
2. *Galeoscoptes carolinensis* (Linn.).—3 specimens, April 12 and 13.
3. *Mniotilta varia* (Linn.).—2 specimens, April 12 and 13.
4. *Compsothlypis americana* (Linn.).—1 specimen, April 12.
5. *Dendroica tigrina* (Gmel.).—3 specimens, April 12.
6. *Dendroica discolor* (Vieill.).—4 specimens, April 12.
7. *Dendroica palmarum* (Gmel.).—3 specimens, April 12.
8. *Dendroica kirtlandi* Baird.—2 specimens, April 12.
9. *Geothlypis trichas* (Linn.).—6 specimens, April 12.
10. *Seiurus aurocapillus* (Linn.).—3 specimens, April 12 and 13.
11. *Setophaga ruticilla* (Linn.).—2 specimens, April 12 and 13.
12. *Cœreba bahamensis* (Reich.).—5 specimens, April 12.
13. *Vireo crassirostris* (Bryant).—5 specimens, April 12 and 13.*

* 3 typical, 2 inclining toward *flavescens*.

14. *Vireo crassirostris flavescens* Ridgw.—1 specimen, April 13.
15. *Spindalis zena* (Linn.).—1 specimen, April 12.
16. *Ammodramus sandwichensis savanna* (Wils.). — 1 specimen, April 12.
17. *Euethia bicolor* (Linn.).—3 specimens, April 12.
18. *Tyrannus dominicensis* (Gmel.).—2 specimens, April 13.
19. *Myiarchus sagræ* Gundl.—2 specimens, April 13.
20. *Doricha evelynæ* (Bourc.).—5 specimens, April 12.
21. *Ceryle alcyon* (Linn.).—1 specimen, April 13.
22. *Falco columbarius* Linn.—2 specimens, April 12 and 13.
23. *Columba leucocephala* Linn.—2 specimens, April 13.
24. *Columbigallina passerina bahamensis* (Mayn.). — 2 specimens, April 12.
25. *Nycticorax violaceus* (Linn.).—1 specimen, April 12.
26. *Porzana carolina* (Linn.).—1 specimen (no date).

VIII. CONCEPCION ISLAND.

1. *Mimus gundlachi* Cab.—9 specimens, March 8.
2. *Dendroica cærulescens* (Linn.).—1 specimen, March 8.
3. *Dendroica petechia gundlachi* Cab.—8 specimens, March 8.
4. *Dendroica discolor* (Vieill.).—1 specimen (no date).
5. *Dendroica palmarum* (Gmel.).—3 specimens, March 8.
6. *Geothlypis trichas* (Linn.).—1 specimen, March 8.
7. *Cœreba bahamensis* (Reich.).—15 specimens, March 8.
8. *Vireo crassirostris flavescens* Ridgw.—4 specimens (all typical), March 8.
9. *Euethia bicolor* (Linn.) —7 specimens, March 8.
10. *Doricha evelynæ* (Bourc.).—2 specimens, March 8.
11. *Columbigallina passerina bahamensis* (Mayn.). — 1 specimen, March 8.
12. *Ægialitis wilsoni* (Ord).—1 specimen, March 8.
13. *Nycticorax violaceus* (Linn.).—1 specimen, April 13.

IX. BOOBY ROCK, NEAR GREEN CAY.

1. *Sula leucogastra* (Bodd.).—1 specimen, April 13.

X. AT SEA.

1. *Spindalis zena* (Linn.).—1 specimen (no date).
2. *Doricha evelynæ* (Bourc.).—1 specimen (no date).
3. *Numenius hudsonicus* Lath.—1 specimen, May 3.

· FIRE-LIGHTING. ·

BY GEORGE H. MACKAY.

'FIRE-LIGHTING' is practised to a greater or less extent by a few market gunners exclusively for gain in the shallow bays adjacent to the Atlantic seaboard. There is a strong general, as well as local, sentiment against the pursuit of water fowl in this manner, and the laws are generally pronounced against it. For this reason it is a rather difficult matter to obtain much reliable information regarding it from those engaged in this calling.

We consequently have but limited knowledge as to the *modus operandi* of pursuing water fowl in this way or its effects. My desire to know something about Fire-lighting has been strengthened from time to time, while on my shooting trips, by seeing usually just after dark, certain lights creeping slowly out on the bay, or moving silently along the shores, and which, as I watched them, would often change from dazzling brightness to total darkness. It was some years before I had an opportunity to investigate these lights, but it finally came through an experienced bayman whom I had previously employed, and who, at times, went after water fowl in this manner.

The great desideratum in this kind of shooting is the lantern, as on its construction much depends, and I describe it from memory in detail in order that a better idea may be formed of the effect its use is likely to produce on birds. A large light is necessary. A locomotive headlight would serve admirably, for it throws a broad and strong light. A small lantern would be of comparatively little use, for the more powerful and far reaching the rays of light, the better the chance of successfully approaching the water fowl. As not many of the baymen can afford a locomotive head-light the result is a variety of lanterns are used, varying according to the means and ingenuity of the owner. The one my boatman used might come under the head of first class lights. It was about fourteen inches wide and eighteen inches high, and was made of tin with plain glass on three sides, the back being tin, bright inside and supporting two large reflectors, in front of which were placed two kerosene lamps with large burners. Tin

doors lined with looking glass were attached to the plain glass sides, thus leaving only the front uncovered. There were funnels at the top to carry off the heat and smoke from the lamps. When ready for use the lantern is securely fastened on the bow of a small boat. The lamps are then lighted and turned low. The boatman rows towards the birds he is in quest of and which may be a quarter of a mile away, resting on some sand bar, or feeding along the shore. Canada Geese are the birds usually pursued. When sufficiently near for his purpose (it now being quite dark), he turns up the lamps, and the looking glass doors are opened and kept in place by a wire rod at such an angle as to focus the rays of light in conjunction with the reflectors at the back. Thus there is cast ahead of the boat a broad and far reaching stream of light. Dark evenings are most suitable, and the water should be smooth. It is desirable that the boat have smooth sides, instead of lap streaks, as the water makes a noise when striking against the latter. The boatman stands or sits at the stern with his gun in readiness, and sculls or poles the boat according to the depth of water.

Great care must be exercised in approaching birds, as a careless knock of the oar against the boat may alarm them. After the birds have come within the rays of light, they must be kept covered by it until shot at, for a change from light to darkness will cause them to fly. A thorough knowledge of the surroundings, and judgment in guiding the boat by the direction of the wind, is necessary to prevent getting turned around, or going to the windward, when the birds may scent your approach. Before starting out, it is important to know the whereabouts of one or more flocks of birds. I remember an afternoon, there being every indication of a favorable evening, when twenty-five Canada Geese sat on a sand bar about a mile from where we were. My boatman said, "We will go after them with the lantern tonight." While on our way to them I sat behind the lantern perfectly still with cocked gun, while the boatman, standing upright in the stern with his gun beside him, sculled silently along, the stream of light from our lantern, with its well-defined limits, lighting up for quite a distance the path in front of the boat. Presently he asked in a whisper if I saw the Geese; I replied "No," and he pointed out some indistinct specks ahead of us. As the wind was blowing across the boat there was no danger of our being scented. As we approached I did not take my eyes from the

Geese. They did not appear afraid or suspicious, but acted in the most natural manner possible. One preened its feathers, another rubbed the side of its head on its back, another dipped its bill in the water, of which there was a depth of about three or four inches on the bar, on which they were standing. The rays of the lantern covered the flock, while outside of its limits all was inky darkness. Not the slightest curiosity or uneasiness was evinced by them on the approach of the light. The boat meanwhile approached too near, being within fifteen yards of them, and although they were not standing close together, we were now obliged to fire. Confusion followed the reports; but it was soon still. Those that could do so flew away, leaving seven dead. That we could have gone into their very midst, seems probable.

Leaving this locality we headed out from shore in search of a large flock of Brant which we had heard when on our way to the Geese. We had no difficulty in finding them, but could not get near enough to see them although we chased them for a long distance by their calls, being quite near them at times. These birds swim faster than the boat can be propelled, and I am told are as a rule difficult to approach. Having decided to return, we were silently moving along the edge of the marsh, sweeping the water adjacent to the shore with our light, when a pair of Black Ducks were observed, feeding and paddling in the rays of the lantern. They were perfectly unconcerned, and although the boatman was standing up, they could neither see nor hear anything. They would turn around and lower their heads to the water. I saw no signs of fear or curiosity, and they showed no particular interest in the light. I finally perceived a slight uneasiness, and as we approached nearer they commenced to swim away with their heads up, apparently with a suspicion that all was not as it should be. I think they may have heard us whispering, still they made no attempt to fly until we fired at them from a distance of not over a dozen or fifteen yards.

Several years after I tried an experiment to see how near I could walk up to a flock of Common Terns (*Sterna hirundo*) with an ordinary hand lantern. They were roosting on the beach. I found I could approach to within about three or four yards of some of them, when they would fly a little way and alight again. This was the result after several trials. I think the

reason I could not approach nearer, was that the lantern distributed an equal amount of light in all directions, thus making me visible; had the lantern been so arranged as to cast the rays only ahead, I think I could have walked among them, or at least close to the outside edge of the flock. The above instances seem to show that the only effect was the dazzling of the birds by the brilliant rays of light cast on them from the lantern. This with the absence of any scent or sound sufficient to make the birds suspicious caused them to act in the manner most natural to them. It seems reasonable to infer, that when such a concentration of light is artificially directed at a person, animal, or bird, the same effect is produced as when looking steadily at the sun; in other words, the light is so dazzling to the eyes as to render them incapable of seeing any object for the time being. This seems to me to be the explanation of the effect of the light thrown on the birds from the lantern. Had a noise been made when we were near them, they would have flown away quickly enough, lantern or no lantern.

It seems to me that the principle objection to the use of a light in pursuing waterfowl after dark lies in the fact that such night shooting harasses the birds on their roosting and feeding grounds, which, as anyone who has had any experience knows, causes them to forsake such places and seek others where they will be unmolested. Fire-lighting is generally not remunerative, and the men who follow it have much to contend with, both in regard to weather, birds, and the law. It is likely to be engaged in by only a few of the baymen, as most of their friends who shoot, being day gunners, are opposed to it, knowing well its evil effect on wild fowl. While I regret that my experience has been so limited, I can still congratulate myself that it has been no greater. I present these notes as a slight contribution to the knowledge of a subject on which little has been written.

A REVISION OF THE SPECIES OF *MOLOTHRUS*
ALLIED TO *M. BONARIENSIS* (GM.).

BY WITMER STONE.

HAVING recently made a careful study of the specimens of Icteridae in the collection of the Academy of Natural Sciences of Philadelphia, which formed the basis of Cassin's review of this family in the Proceedings Phila. Acad., 1865-6, I found that the true nature of several of the species of *Molothrus* and *Lampropsar* described by him has been but very imperfectly understood by subsequent writers on these groups.

This fact led to a more extended study of the species of *Molothrus* allied to *M. bonariensis*, based upon the specimens in the Academy collection and a number from the collection of the United States National Museum, which were loaned to me through the kindness of Mr. Robert Ridgway of that institution.

The most surprising point in connection with this investigation was Cassin's mistake in the identification of the species of *Lampropsar*, the birds described by him as *L. tanagrinnus* proving to be young males of the small form of *Molothrus bonariensis*, known as *M. atronitens*, while his *L. guianensis* is an adult male of the same species. With such an idea of the nature of the genus *Lampropsar*, it is not surprising that Mr. Cassin considered it a subgenus of *Molothrus* and that the new species described by him as *L. cabanisii* should prove to be a true *Molothrus*—i.e., the one subsequently described by Finsch as *M. cassini*. Finsch identified this bird with the *M. discolor* of Cassin, and as this name (based on *Passerina discolor* Vieill.), proved to be a synonym of *Molothrus bonariensis*, the new name, *M. cassini*, was proposed for the species. As a matter of fact, however, the *M. discolor* of Cassin is a very different bird from the one with which Finsch identified it, and is still unfortunately without a name.

In view of the confusion which exists in this group, I have thought it worth while to give a full synonymy of the several species and to add descriptions by which they may be separated.

The genus *Molothrus* as generally recognized contains two well defined genera, *Molothrus* and *Callothrus*, which have

been clearly separated by Ridgway (Manual of N. A. Birds, p. 589). To *Callothrus* belong *M. aeneus* Wagl., *M. robustus* Cab., and probably *M. armenti* Cab., a bird which I have never seen, and which is not now in the Academy collection, though Cassin refers a young male formerly in the collection to this species. To *Molothrus* belong the brown headed *M. ater* (Bodd.) and *M. ater obscurus* (Gmel.), the rufous winged *M. badius*, *M. fringillarius*, *M. rufoaxillaris*, and the group of glossy purple species allied to *M. bonariensis* (Gm.). It is among the latter that the confusion exists.

Having examined all the material at my disposal and consulted all the descriptions applying to this group, I think that five species can be recognized, the adult males of which may be distinguished by the following table.

- A. Reflections of head and interscapulum decidedly purple. Breast bright purple, rather brighter than the back and generally with slight golden reflections.
- a. Wing, 3.80 to 4.00 in.....*M. atronitens*.
 - b. Wing, 4.25 to 4.50 in.
 - aa. Bill moderate, culmen .73 in.....*M. bonariensis*.
 - bb. Bill much heavier, culmen .82 in. or more...*M. purpurascens*.
- B. Reflections of head and interscapulum bluer. Breast darker purple without golden reflections. Bill more slender than in any of the other species, .80 in. long.....*M. venezuelensis*.
- b. Wing 5.15 to 5.25 in.....*M. cabanisi*.

The synonymy of the species, with brief descriptions, follows :

M. bonariensis (Gm.).

Tanagra bonariensis GMELIN, Syst. Nat. I, p. 898, 1788.—BONAPARTE, Conspectus Av. I, p. 437.

Molothrus bonariensis CABANIS, Mus. Hein. I, p. 193.—CASSIN, Proc. A. N. S. Phila. 1866, p. 19.—SCLATER & SALVIN, P. Z. S. 1868, p. 140.—SCLATER, Ibis, 1884, p. 5; Catal. Bds. Brit. Mus. XI, p. 335.

Icterus sericeus LICHT., Doubl., p. 19, 1823.

Molothrus sericeus BONAPARTE, Consp. Av. I, p. 437.—CASSIN, Proc. A. N. S. Phila. 1866, p. 21.

Molothrus sericeus BURM. Syst. Ueb. II, p. 279;—La Plata Reise, II, p. 494.

Scolecophagus sericeus SW., An. in Menag., p. 301.

Icterus minor SPIX, Av. Bras. I, p. 67, pl. 63, fig. 2.

Icterus violaceus MAX. Beitrag. III, p. 1212.

Molothrus niger GOULD, Zool. Voy. Beagle, III, p. 107.

Passerina discolor VIEILL. N. D. d'H. N. XXXIV, p. 552; Enc. Meth. p. 939.

Icterus maxillaris D'ORB. & LAFR. Syn. Av. II, p. 6.—D'ORB. Voy., Ois. p. 369, tab. lii, fig. 2.

Molothrus maxillaris CASSIN, Proc. A. N. S. Phila. 1866, p. 21.

Adult male, above shining purplish black, with bluish green reflections on the lower rump, wings and tail; beneath purplish black, a little brighter, with more or less of a golden reflection. Wing 4.25-4.50 in. Bill moderate, rather short and conical; culmen .73 in.; depth through nostril, .36 in; tail, 3.55 in.

Female, ashy brown, paler beneath.

Habitat. Eastern S. America; Argentine Republic to Brazil.

Cyrtotes maxillaris (d'Orb.) seems to be merely this species with the beak deformed. I have examined the two specimens in the Academy collection and can find no other difference.

Molothrus atronitens Cab.

Molothrus atronitens CAB., in Schomb. Guian. III, p. 682; Mus. Hein. I, p. 193.—PELZ. Orn. Bras., p. 200.—FINSCH, P. Z. S. 1870, p. 576.—BERLEPSCH, Journ. f. Orn. 1873, p. 249.—SCLATER, Ibis, 1884, p. 6; Catal. Birds Brit. Mus. XI, p. 337.

Lampropsar tanagrinus CASSIN, Proc. A. N. S. Phila. 1866, p. 22.

Lampropsar guianensis CASSIN, Proc. A. N. S. Phila. 1866, p. 22.

This species seems exactly like the preceding in plumage, but is distinguished by its smaller size while the bill is proportionately longer. Wing 3.80 to 4.00 in., tail 3.35 in., culmen .70 in., depth of bill through the nostril .30 in.

Young birds appear much duller and were identified with *Lampropsar tanagrinus* by Cassin (see above).

M. atronitens seems to be the representative of *M. bonariensis* in northern South America, and will doubtless prove to be a mere race of that species.

Habitat. Venezuela, Guiana, and Trinidad.

Molothrus cabanisii Cass.

Molothrus (Lampropsar) cabanisii CASSIN, Proc. A. N. S. Phila. 1866, p. 32.

Molothrus cassini FINSCH, P. Z. S. 1870, p. 567.—BERLEPSCH, Journ. für Orn. 1873, p. 250.—SCLATER, Ibis, 1884, p. 6; Catal. Birds Brit. Mus. XI, p. 337.

Molothrus discolor SALV. & GODM. Ibis, 1880, p. 123.—SCL. & SALV. P. Z. S. 1879, p. 509. (*Non* CASSIN, Proc. A. N. S. Phila. 1866, p. 20.)

This species is exactly like *M. bonariensis* in plumage, but may be easily distinguished by its large size. Wing, 5.15 to 5.25 in., tail 4.85 in., culmen .80 in., depth of bill through the nostril .38 in.

Cassin's description of this species is perfectly clear, but the fact of its being placed in the genus *Lampropsar* has probably accounted for its not having been recognized.

Habitat. Colombia and Venezuela.

Molothrus purpurascens Hahn.

Xanthornus purpurascens HAHN & KÜSTER, Vög. aus Asien, Lief. V, t. 4.

Molothrus purpurascens CASSIN, Proc. A. N. S. Phila. 1866, p. 20.—SCLATER, P. Z. S. 1869, p. 148; Ibis, 1884, p. 7.—TACZ. Orn. Péruv. II, p. 422.—SCLATER, Catal. Birds Brit. Mus. XI, p. 337.

Adult male, plumage as in *M. bonariensis*, bill much heavier. Female, uniformly lighter than that of the eastern species. Wing, 4.35 to 4.45 in., tail 3.40 in., culmen .82 in., depth of bill through nostril, .40 in.

Habitat. Western Peru.

Molothrus venezuelensis, sp. nov.

Molothrus discolor CASSIN, Proc. A. N. S. Phila. 1866, p. 20; *non Passerina discolor* VIEILL. Nouv. Dict. d'H. N. XXXIV, p. 552; *non* SCL. & SALV. P. Z. S. 1879, p. 509, etc.

About the size and general appearance of *M. bonariensis* but uniform steel blue above with scarcely a trace of purple, beneath dark purple. Bill longer and more slender than in *M. bonariensis* and tail longer. Wing 4.40 in., tail 3.20 in., culmen, .80 in., depth of bill through nostril .35 in.

Though the distinctly blue shade of the plumage serves to distinguish this species from *M. bonariensis* (or any other species of the group) in the majority of cases, nevertheless, Mr. Ridgway informs me that some specimens of the latter species approach *M. venezuelensis* very closely in this respect. The shape of the bill, however, is constantly different. I have seen but two specimens of this species, a young male in the Philadelphia Academy collection (No. 3652) labelled (probably erroneously) from Cuba, which is one of the types of Cassin's *M. discolor*, and an adult male in the collection of the U. S. National Museum, "No. 88423, Venezuela. A. Goering. Museum von Berlepsch." The latter may be considered the type specimen.

DESCRIPTIONS OF NEW BIRDS FROM THE BAHAMA ISLANDS, WITH REMARKS ON THE SPECIES OF *SPEOTYTO* WHICH OCCUR IN THE WEST INDIES.

BY CHARLES B. CORY.

Spindalis zena stejnegeri,* subsp. nov.

SP. CHAR. (Type from Eleuthera Island, Bahamas, ♂, No. 17014, Coll. C. B. Cory, Boston.)—Similar to *Spindalis zena* from New Providence, but differs in having the sides and flanks black or brownish black and the chestnut collar narrower and edged with yellowish. The outer webs of the two outer tail feathers are partly white. Immature birds often lack the black sides.

Dendroica pityophila bahamensis, subsp. nov.

SP. CHAR. (Type from Abaco Island, Bahamas, ♂, No. 17026, Coll. C. B. Cory, Boston.)—Upper parts, including sides of the head and neck, plumbeous gray, not light ash gray as in *Dendroica pityophila* Gundl. Forehead and crown greenish yellow, showing light yellow at the base of the upper mandible; throat and upper breast yellow, bordered on the breast by a few feathers marked unevenly with black. Belly dull white shading into gray on the sides and flanks. A faint indication of wing bands, showing very faintly in some specimens. Tail dark brown, the two outer feathers showing an arrow-shaped white mark on the terminal portion of the inner webs, variable in different specimens; most of the feathers of the wings and tail showing very narrow grayish edging on the outer webs. Bill and feet dark brown. Closely allied to *Dendroica pityophila* of Cuba. Length, 4.50; wing, 2.30; tail, 2.00; tarsus, .60; bill, .45.

The female resembles the male, but the colors are slightly paler and it is perhaps somewhat smaller.

Habitat. Abaco and Great Bahama Islands, Bahamas.

Speotyto cunicularia bahamensis, subsp. nov.

SP. CHAR. (Type from Inagua, Bahamas, ♂, No. 17062, Coll. C. B. Cory, Boston.)—Larger than *S. dominicensis*, being about the same size as *S. c. floridana*; but with striping on the underparts broader and darker than in *floridana*; the tarsus is feathered similar to *S. cunicularia*, the feathers being tinged with pale brown. Length, 8.10; wing, 6.50; tail, 3.40; tarsus, 1.75.

Habitat. Inagua, Bahamas.

* In compliment to Dr. Leonhard Stejneger.

The variation in the different forms of *Speotyto* is great and not at all constant, specimens from the same locality varying very considerably. The absence or presence of feathers on the tarsus varies much according to season and age. But there is sufficient difference in series from different localities to warrant recognizing two at least as subspecies. By separating the Inagua bird we have the known West Indian forms distributed as follows :

Speotyto cunicularia floridana Ridgw.

Tarsus nearly naked; underparts marked with irregular brown bands, becoming more imperfect and paler on the belly and flanks. Length, 8.15; wing, 6.50; tarsus, 1.75.

Habitat. Florida, Cay Sal, New Providence, Eleuthera, and Andros Islands, Bahamas.

Speotyto cunicularia bahamensis Cory.

Tarsus feathered; underparts marked with broad dark brown bands, extending upon the belly and flanks; feathers on the tarsus showing a brownish tinge. Length, 8.10; wing, 6.50; tarsus 1.75.

Habitat. Inagua, Bahamas.

Speotyto cunicularia dominicensis Cory.

Smaller than *floridana* or *bahamensis*. Tarsus feathered rather less than in *bahamensis* but more than in *floridana*. Underparts marked with dark brown bands, narrower and more regular than in either of the others, some of the breast feathers showing indications of a fourth band, and most of the belly feathers having three perfectly distinct bars. Length, 7.50; wing, 5.45; tarsus, 1.55.

Habitat. Haiti and San Domingo, W. I.

Speotyto guadeloupensis (Ridgw.).

A small dark species, having the spotting on the upper parts very small, often reduced to mere specks; breast feathers often showing two brown bands. Wing, 6.40; tail, 3.40; tarsus, 1.80.

Habitat. Guadeloupe and St. Nevis, W. I.

Speotyto amauro Lawr.

Somewhat darker than *guadeloupensis* but similar, the spots on the interscapular region somewhat longer, and the breast marking somewhat heavier. Wing, 6.30; tail, 3.10; tarsus, 1.50.

Mr. Lawrence, in his original description, writes : "In the Antigua bird each feather of the breast is crossed with but one bar, while those of the other (*guadeloupensis*) are crossed with two." Insufficient material makes it inexpedient to attempt to decide as to the standing of these forms, but the two birds are very closely allied.

Habitat. Antigua, W. I.

LIST OF THE BIRDS OBTAINED BY MR. C. S. WINCH
ON THE ISLANDS OF GREAT BAHAMA AND
ABACO, BAHAMA ISLANDS, DURING JUNE,
AND ON ELEUTHERA IN JULY, 1891.

BY CHARLES B. CORY.

GREAT BAHAMA.

<i>Ægialitis wilsonia</i> (Ord).	<i>Geothlypis rostratus tanneri</i> (Ridg.)
<i>Geotrygon martinica</i> (Gmel.).	<i>Dendroica petechia gundlachi</i> Bd.
<i>Chordeiles minor</i> Cab.	<i>Dendroica vigorsii</i> (Aud.).
<i>Dryobates villosus maynardi</i> Ridg.	<i>Dendroica pityophila bahamensis</i>
<i>Sporadinus ricordi</i> (Gerv.).	Cory.
<i>Pitangus bahamensis</i> Bryant.	<i>Cæreba bahamensis</i> (Reich.).
<i>Myiarchus sagræ</i> Gundl.	<i>Sitta pusilla</i> Lath.—First record of
<i>Tyrannus dominicensis</i> (Gmel.).	this species in the Bahamas.
<i>Agelaius phæniceus bryanti</i> Ridg.	<i>Vireo crassirostris</i> Bryant.
<i>Loxigilla violacea</i> (Linn.).	<i>Mimus polyglottos orpheus</i> (Linn.).
<i>Spindalis zena townsendi</i> Ridgw.	<i>Mimocichla plumbea</i> (Linn.).
<i>Callichelidon cyaneoviridis</i> Bryant.	

ABACO.

<i>Buteo borealis</i> (Gmel.).	<i>Loxigilla violacea</i> (Linn.).
<i>Zenaidura macroura</i> (Linn.).	<i>Spindalis zena townsendi</i> Ridgw.
<i>Chordeiles minor</i> Cab.	<i>Vireo crassirostris</i> Bryant.
<i>Sporadinus ricordi</i> (Gerv.).	<i>Callichelidon cyaneoviridis</i> Bryant.
<i>Doricha evelynæ</i> (Bourc.).	<i>Geothlypis rostratus tanneri</i> (Ridg.).
<i>Centurus blakei</i> Ridgw.	<i>Dendroica vigorsii</i> (Aud.).
<i>Dryobates villosus maynardi</i> Ridg.	<i>Dendroica pityophila bahamensis</i>
<i>Myiarchus sagræ</i> Gundl.	Cory.
<i>Contopus bahamensis</i> Bryant.	<i>Dendroica dominica</i> (Linn.).
<i>Pitangus bahamensis</i> Bryant.	<i>Cæreba bahamensis</i> (Reich.).
<i>Tyrannus dominicensis</i> (Gmel.).	<i>Polioptila cærulea</i> (Linn.).
<i>Icterus northropi</i> Allen.*	<i>Mimus polyglottos orpheus</i> (Linn.).
<i>Agelaius phæniceus bryanti</i> Ridg.	<i>Mimocichla plumbea</i> (Linn.).

ELEUTHERA.

<i>Colymbus dominicus</i> Linn.	<i>Speotyto cunicularia floridana</i>
<i>Ardea virescens</i> Linn.	Ridgw.
<i>Totanus flavipes</i> (Linn.).	<i>Geotrygon martinica</i> (Gmel.).

* Several specimens taken, all being slightly darker yellow than the type. Not previously known except from Andros Island.

<i>Saurothera bahamensis</i> <i>Bryant</i> .	<i>Loxigilla violacea</i> (<i>Linn.</i>).
<i>Doricha evelynæ</i> (<i>Bourc.</i>).	<i>Euetheia bicolor</i> (<i>Linn.</i>).
<i>Coccyzus minor maynardi</i> <i>Ridgw.</i>	<i>Vireo crassirostris</i> <i>Bryant</i>
<i>Myiarchus sagræ</i> <i>Gundl.</i>	<i>Geothlypis coryi</i> <i>Ridgw.</i>
<i>Tyrannus dominicensis</i> (<i>Gmel.</i>).	<i>Cæreba bahamensis</i> (<i>Reich.</i>).
<i>Contopus bahamensis</i> <i>Bryant</i> .	<i>Mimus gundlachi</i> <i>Cab.</i>
<i>Spindalis zena stejnegeri</i> <i>Cory.</i>	<i>Mimocichla plumbea</i> (<i>Linn.</i>).

LIST OF BIRDS COLLECTED ON THE ISLAND OF
INAGUA, BAHAMA ISLANDS, FROM MAY 1 TO
JULY 10, 1891.

BY CHARLES B. CORY.

<i>Phaëthon flavirostris</i> <i>Brandt</i> .	<i>Speotyto cunicularia bahamensis</i> <i>Cory.</i>
<i>Sterna antillarum</i> (<i>Less.</i>).	<i>Chrysotis leucocephala</i> (<i>Linn.</i>).
<i>Sterna dougalli</i> (<i>Montag.</i>).	<i>Doricha lyrura</i> <i>Gould</i> .
<i>Sterna sandvicensis acuflavida</i> (<i>Cabot</i>).	<i>Coccyzus americanus</i> (<i>Linn.</i>).
<i>Sterna maxima</i> <i>Bodd.</i>	<i>Coccyzus minor maynardi</i> <i>Ridgw.</i>
<i>Nycticorax violaceus</i> (<i>Linn.</i>).	<i>Myiarchus sagræ</i> <i>Gundl.</i>
<i>Ardea virescens</i> <i>Linn.</i>	<i>Tyrannus dominicensis</i> (<i>Gmel.</i>).
<i>Ardea candidissima</i> <i>Gmel.</i>	<i>Dolichonyx oryzivorus</i> (<i>Linn.</i>).
<i>Ajaja ajaja</i> (<i>Linn.</i>).	<i>Loxigilla violacea</i> (<i>Linn.</i>).
<i>Tringa minutilla</i> <i>Vicill.</i>	<i>Euetheia bicolor</i> (<i>Linn.</i>).
<i>Ereunetes pusillus</i> (<i>Linn.</i>).	<i>Vireo altiloquus barbatulus</i> (<i>Cab.</i>).
<i>Ægialitis semipalmata</i> <i>Bonap.</i>	<i>Vireo crassirostris</i> <i>Bryant</i> .
<i>Ægialitis wilsonia</i> (<i>Ord</i>).	<i>Cæreba bahamensis</i> (<i>Reich.</i>).
<i>Ægialitis vocifera</i> (<i>Linn.</i>).	<i>Seiurus aurocapillus</i> (<i>Linn.</i>).
<i>Ægialitis meloda</i> (<i>Ord</i>).	<i>Seiurus noveboracensis</i> (<i>Gmel.</i>).
<i>Symphemia semipalmata</i> (<i>Gmel.</i>).	<i>Setophaga ruticilla</i> (<i>Linn.</i>).
<i>Arenaria interpres</i> (<i>Linn.</i>).	<i>Geothlypis trichas</i> (<i>Linn.</i>).
<i>Hæmatopus palliatus</i> <i>Temm.</i>	<i>Dendroica striata</i> (<i>Forst.</i>).
<i>Himantopus mexicanus</i> (<i>Müll.</i>).	<i>Dendroica palmarum</i> (<i>Gmel.</i>).
<i>Zenaida zenaida</i> (<i>Bonap.</i>).	<i>Dendroica petechia gundlachi</i> <i>Bd.</i>
<i>Melopelia leucoptera</i> (<i>Linn.</i>).	<i>Poliophtila cærulea</i> (<i>Linn.</i>).
<i>Pandion haliaëtus carolinensis</i> (<i>Gmel.</i>).	<i>Mimus polyglottos elegans</i> (<i>Sharpe</i>)
	<i>Mimus gundlachi</i> <i>Cab.</i>
	<i>Margarops fuscatus</i> (<i>Vicill.</i>).

ON A COLLECTION OF BIRDS MADE ON THE
ISLANDS OF ANGUILLA AND CAY SAL OR SALT
CAY, BAHAMA ISLANDS, BY MR. CYRUS
S. WINCH, DURING MAY, 1891.

BY CHARLES B. CORY.

THE Islands of Anguilla and Cay Sal are situated about sixty miles north of Cuba at the extreme southwestern portion of the Bahama Banks. Anguilla is high and rather barren, the lower portions being covered with a low scrub and brush. Unfortunately much of the vegetation had been destroyed by fire, and portions of it were still burning at the time of Mr. Winch's visit. He observed many birds passing on their migration north. On May 10 and 11 the Bobolink and Black-poll Warbler (*Dendroica striata*) were abundant. The species taken on Anguilla were:

<i>Sterna fuliginosa</i> Gmel.	<i>Chelidon erythrogaster</i> (Bodd.).
<i>Zenaida zenaida</i> (Bonap.).	<i>Setophaga ruticilla</i> (Linn.).
<i>Coccyzus americanus</i> (Linn.).	<i>Geothlypis trichas</i> (Linn.).
<i>Dolichonyx oryzivorus</i> (Linn.).	<i>Dendroica cærulescens</i> (Gmel.).
<i>Callichelidon cyaneoviridis</i> Bryant.	<i>Dendroica striata</i> (Forst.).

Cay Sal is rather more fertile than Anguilla and has a fresh water pond in the interior surrounded by cocoanut and other trees. A large rabbit (probably introduced) was at one time abundant, but is claimed now to be dying off. The Burrowing Owl on this island appears to be the same as the Florida form. Mr. Winch reached Cay Sal on May 14 and found birds abundant, mostly our common species on their migration. On May 16 birds were less numerous and on May 19 very few were to be seen on the island. He procured the following:

<i>Sterna antillarum</i> (Less.).	<i>Callichelidon cyaneoviridis</i> Bryant.
<i>Arenaria interpres</i> (Linn.).	<i>Seiurus noveboracensis</i> (Gmel.).
<i>Speotyto cunicularia floridana</i>	<i>Geothlypis trichas</i> (Linn.).
Ridgw.—Resident and not uncommon.	<i>Geothlypis agilis</i> (Wils.).—Not previously recorded from the West Indies.
<i>Coccyzus americanus</i> (Linn.).	<i>Dendroica vigosii</i> (Aud.).
<i>Tyrannus dominicensis</i> (Gmel.).	<i>Turdus alicie bicknelli</i> (Ridgw.).
<i>Agelaius phœniceus bryanti</i> Ridg.	—First record for the West Indies.
<i>Dolichonyx oryzivorus</i> (Linn.).	
<i>Chelidon erythrogaster</i> (Bodd.).	

OBSERVATIONS ON THE BIRDS OF JAMAICA,
WEST INDIES.II. A LIST OF THE BIRDS RECORDED FROM THE ISLAND, WITH
ANNOTATIONS.

BY W. E. D. SCOTT.

THE PURPOSE of the following list is to show as concisely as possible the actual species that are known to have occurred on the island of Jamaica, with some account of their habits and distribution, time of appearance if migratory, and place and time of breeding. During the short time, five months, that I spent on the island, I was able to gather much useful information, but this alone would have been quite inadequate to the purpose of this paper, and I am much indebted to a number of gentlemen of Jamaica for information, both written and verbal, which will be duly indicated where data so obtained are used.

To Mr. Charles B. Taylor of Rae Town, Kingston, Jamaica, who was for a time the acting curator for the Department of Zoölogy of the Jamaica Institute of Kingston, I am under great obligation for manuscript notes, the records of his own observations. I shall have frequently to quote these and shall refer to them without further comment as Mr. Taylor's notes.

Having had little time or facility for the study of the water birds, especially such as are migratory, I am obliged to use information already published, in order to make this list as complete as possible. At the same time care has been taken to exclude all species from the list save those that have been absolutely recorded from the island.

1. *Podilymbus podiceps* (Linn.). PIED-BILLED GREBE.—This is a resident on the island and both Philip Henry Gosse, Esq., and the late Richard Hill, Esq., of Spanishtown speak of it as "*Podilymbus carolinensis*?" or "Black-throated Grebe." Mr. Hill found the bird not rare on the River Cobre, but does not state at what season of the year he observed it.

The only individual that I met with during the past winter was taken on a small pond near Priestmans River, Portland Parish, on the 23d Jan-

uary, 1891. It is an adult female, No. 10574 of my catalogue, and is in almost full plumage. The bird was in company with a large number of *Colymbus dominicus* Linn.

The following in regard to this individual I copy from my field notes: "Priestmans River, 23d January, 1891. Secured today an adult female (10574) in full plumage, but much browner beneath than individuals from the United States. The ovaries are so much developed that I am inclined to believe that the species would soon have bred at this point."

From Mr. Taylor's notes I quote as follows: "On the Rio Cobre and Hunt Bay Rivers, as well as many of the larger canals that flow from them, this species is of common occurrence. During December, 1885, I visited the 'Dam' or headworks of the Rio Cobre Irrigation Canal, situated on the road to the north side of the island, at a point about four and a half miles above Spanish Town. On the large sheet of water termed the Dam, above the main intake, Grebes were numerous, swimming and feeding with Gallinules among the thick growth of surface weeds. I walked out along the viaduct on the river near where a few Grebes were swimming. They did not appear much alarmed, nor swim away, but if looked at intently for any time they submerged their bodies, sinking as they rested on the water, just as if they had been gently pulled under by the legs. I watched two or three dive and was surprised at the incredible length of time they remained under. Six eggs from this locality, taken on 14th July, 1888, show various stages of incubation. Some of the eggs are covered with small excrescences where the chalky covering appears unusually thick."

2. *Colymbus dominicensis* Linn. DIVER.—A common resident species in the small fresh water ponds of the Parish of Portland, and said to be plentiful in suitable localities throughout the island.

Philip Henry Gosse, Esq., says in his 'Birds of Jamaica,' page 440: "The ponds of the cattle-pens are the favorite resorts of this little Grebe." The cattle-pens of Jamaica, it may be explained, are estates given up to the breeding of cattle and to dairy purposes. The large open pastures, often many hundred acres in area, generally include shallow fresh water ponds of varying extent, and such sheets of water are the localities most affected by this species. Mr. Gosse found nests with four eggs in August, but as the birds had almost assumed their full breeding plumage in January, I conclude that the record of August nesting must be that of a second brood.

At Priestmans River, January 7, 1891, I found this a rather common species, apparently mated. A male taken in full plumage had the testes as large as the largest size of buckshot. At the same locality, 20th January, 1891, a male taken (No. 10485) is apparently in the plumage of the first year. No black about the throat and generally much lighter throughout in color than birds in full plumage. The testes were elongated in this individual, being about a third of an inch in length and one eighth of an inch in their smaller diameter. The irides were dull greenish yellow. At the same locality, 23d January, 1891, I took four individuals in a shallow pond,

Nos. 10570 to 10573 inclusive. Three were females and one a male. The females all appeared about to breed, but showed considerable individual variation in this respect. In one the egg yolk was almost or quite developed and the first egg would have been laid in a week at latest. The other two would have bred in the next four or five weeks. These four birds were all in full plumage. Many individuals were seen beside those that were secured, and the birds were abundant at this point, though of course local in distribution.

From Mr. Taylor's notes I add the following: "I have never seen this species associating with the larger or Pied-billed Grebe, nor have I ever noted it on any waters, save those of the 'ponds' that occur on nearly all cattle 'pens.' On many of these miniature lakes, however, they are numerous, nesting among the rushes and rank growth at the margins. Three eggs in my possession were taken in the month of September, 1888, from a pond at 'New Works,' a pen near Linstead in St. Catherine."

3. *Æstrelata caribbæa* (Carte). JAMAICA PETREL. BLUE MOUNTAIN DUCK. DRY LAND BOOBY.—Dr. E. N. Bancroft in the 'Zoological Journal' (Vol. V, 1828, pp. 80, 81) speaks at some length of a bird, evidently a Petrel of some kind. There is no attempt at a description and no figure is given. He suggests at the end of his remarks that if it should be found to be a new species, the name *Procellaria jamaicensis* be applied to it. Though this name has been used by many authors in dealing with the species under discussion, it is clearly *nomen nudum*, and as such should be dispensed with. Dr. Alexander Carte in Proceedings of the London Zoölogical Society for 1866 (pp. 93-95) figures and carefully describes under the name of *Pterodroma caribbæa* the bird under consideration. This appears to be the first recognizable diagnosis. The types were two birds sent to the Royal Dublin Society by Mr. W. T. March, and the following notes were sent by the same gentleman to Dr. Alexander Carte, and are quoted in the paper above cited.

"It is a night-bird, living in burrows in the marly clefts of the mountains at the east and northeast end of the island.

"The burrows form a gallery 6 to 10 feet long, terminating in a chamber sufficiently commodious to accommodate the pair; from this they sally forth at night, flying over the sea in search of food (fishes), returning before dawn.

"It is often seen on moonlight nights and at sunrise running about the neighborhood of its domicile, and sometimes crossing the road regardless of the laborers going to their work. I know nothing of its nidification.

"The first specimen recorded was obtained by the late George Atkinson. The second by Sir Henry Barkly. The next, a pair,* were sent by me to the Royal Dublin Society."

The small number of individuals extant in collections is a commentary on its rarity, or perhaps on the difficulty of obtaining a bird that was common at points on the Island of Jamaica in very recent times.

* The types.

So careful and painstaking a worker as the late Philip Henry Gosse, Esq., only knew the bird by hearsay, and I quote as of interest the few words he devotes to it (Birds of Jamaica, p. 437), he in turn quoting from letters from his friend Richard Hill, Esq.

"In the Blue Mountains, high up toward their summits, is a curious BURROWING bird, which they call the Blue Mountain Duck. It is described as having webbed feet and a hooked parrot-bill. This description would indicate a species of *Alca*. It inhabits holes in the cliffs, and is said to burrow to the extent of ten feet. Nothing is known of its habits of feeding. E. McGeachy, Esq., Crown Surveyor for the county of Surrey, first informed me of the existence of such birds. He had himself taken them from their burrows. These facts have also been assured me by other observers."

Gosse agrees with Mr. Hill that the bird "seems to be of the family *Alcadæ*," and speaks of a specimen "in the possession of George Atkinson, Esq., of Newcastle-on-Tyne."

The only specimens I saw were the two in the collection of the Jamaica Institute, referred to below by Mr. Taylor.

In regard to the present status of these birds on the island, I believe them to be nearly if not quite exterminated. The following details are from my field notes.

Mr. Herbert T. Thomas, Inspector of Jamaica Constabulary, Morant Bay, Jamaica, whose explorations in the little known parts of the Blue Mountains have added much to our knowledge, believes that certain notes heard by him while camped at night on high altitudes, are to be attributed to these birds. This he bases on the knowledge of his guides who assured him that they knew the peculiar sounds well. Mr. Thomas kindly gave me this information personally.

During my stay in the vicinity of Priestmans River, a black man of great intelligence, some education, and a reputation for integrity not to be questioned, aided me in procuring certain of the rarer birds of the island. His name is William King, and he was recommended to me as a person familiar with the birds of the country, and as an expert woodsman and hunter. After employing him for some three months I feel bound to say in this connection that he did much to aid me in the work I was engaged in, and that I have rarely had so careful an observer as he proved to be, to assist me. Toward the last of my stay this man made two expeditions for me into the mountains in quest of the Petrel under consideration. The results of these two trips I summarize as follows:

On the 25th February, 1891, I sent King to Mooretown to see what he could learn in regard to the Jamaica Petrel, a bird which he had heard of and described to me in a general way. He returned on the night of the 27th with the following information. At Mooretown he learned of a man several miles from that place who, it was thought, might know of the birds. Finding him the next day the man told him of a bird which he called a "*dry land Booby*," which lived in holes in the cliffs and which had at one time been used by the people living in the mountains as an article

of food. This man said that not long before he had taken a pair of these birds from one of the holes and had eaten them. He described the noises they make at night and leaves little doubt in my mind as to their identity. Another man told him that these birds were called 'Blue Mountain Ducks.'

I sent King off again the next day with orders to go to the point where the birds burrowed and to try to get me some of them, offering a considerable reward in addition to his regular wages should he be successful. He was to hire the man spoken of to act as guide and to help in digging out the burrows. This time he was gone six days and reported on his return that he and two other men had gone to the roosting or breeding places of the 'dry land' Boobies and had dug out some twenty-five burrows, but had been unable to find a single bird. In many of the holes excavated they found the mongoose (*Herpestes griseus*), now so abundant throughout the island, and of which I hope to write in some detail later. It was the common opinion of the people in the vicinity that the birds and their eggs had been so preyed upon by the mongoose that the birds had about disappeared or at least become very rare. Numbers of different people had assured him that formerly there were plenty of these birds. Making all allowances possible, I am convinced that the information here given is substantially correct, and so record it, trusting it may be of aid to others who care to work personally in the matter.

From Mr. Taylor's notes on this bird I quote the following: "Since the introduction of the mongoose, the Blue Mountain Duck, or Booby Duck, as it is more frequently termed, appears to have been sadly reduced in numbers, and from *one* favorite locality, at least, it would appear they have been completely extirpated. On the slopes and ridges of the Blue Mountains, near Cinchona, where once their burrows were said to be abundant, and the birds themselves of frequent occurrence, they are no longer known. Two skins are in the Institute collection, ♂ and ♀. They are labelled 'Cinchona Plantations, St. Andrews, 17-11, '79. W. Nock, collector,' and formed part of a collection of skins presented by Sir Edward Newton.

"Only recently, however, I have had indications of their occurrence in the 'John Crow Mountains,' a range of inaccessible limestone hills to the east of the Blue Mountains, where it is maintained the birds are still abundant. The information was furnished to Mr. W. Fawcett by an intelligent native resident in the district, who agreed to furnish specimens for the Museum of the Jamaica Institute.

"When at sea near the Morant Cays a Petrel passed close to the vessel which may have been this species."

4. *Oceanites oceanicus* (Kuhl). WILSON'S PETREL.—This species has been recorded from the coast of Cuba and Grenada, and it seems probable that it is the species referred to by Mr. Hill and quoted by Gosse (*Birds of Jamaica*, p. 437) as follows: "A curious bird of the family *Procellariidæ* was found in the Rio Grande in Portland after the late storms (in the autumn of 1846)."

5. *Anous stolidus* (Linn.). NODDY.—This Tern is spoken of by Gosse (*Birds of Jamaica*, pp. 434-437) as being common at Pedro Cays. I did not meet with it at any point on the shores of Jamaica, but give Mr. Taylor's very full and interesting notes, as follows: "In April, 1890, I visited the Morant Cays, my main object being to acquire evidence as to the exact number of eggs normally deposited by the Noddy and Sooty Terns, concerning which, until lately, considerable doubt appears to have existed. I have all along believed that only a single egg is deposited by either species, and the information I have from time to time elicited from the egg-gatherers and others acquainted with the birds has always been in support of the assumption. On this occasion circumstances compelled me to leave the Cays before the general arrival of the birds, but the question has since been definitely settled by Captain Jas. B. Young of H. M. S. 'Pylades', whose observations, made during a visit to the Cays in June of the same year, form the subject of a communication appearing in the January number of 'The Ibis' for this year.

"At the time of my arrival at the Cays (2d April) there were no Sooty Terns there and very few Noddies, but these latter increased in numbers daily, until by the 19th April, the date of my departure, they had assembled in hundreds and were evidently preparing to lay, yet in two females taken two or three days after my arrival, the eggs in the ovaries were very small.

"Soon after sunset the birds came in to roost among the low bushes fringing the shore, and up to a late hour many kept arriving. They flew very swiftly, just skimming the surface of the water, and, standing on the shore at dusk (the time they began to arrive), it was rarely possible to see the birds coming until they were actually on the island. They alighted noiselessly and instantly on gaining the fringing bushes; later in the month, however, as their numbers increased, belated birds found difficulty in effecting an easy landing among the branches, those already in possession pecking right and left at all new comers and croaking harshly. Each day, as their numbers increased, they became more vociferous, until at last the melancholy wail of those flying overhead and the croak of the sitting birds was kept up without intermission all through the night. On moonlight nights they appeared unusually abundant and restless.

"I have watched them there until far into the night, as in scores they kept flying to and from the bushes. Although up and about before dawn on most mornings, I was seldom in time to watch the Noddies leave their roost. One morning, however, I got a good idea of their numbers. It wanted about an hour or so of daybreak, and the moon was still bright, when someone walking along the shore appeared to give a general alarm. Scores of birds got up and went swiftly out to sea, and for some little time a constant stream poured out from the bushes along the shores in every direction, as far as it was possible to see; flying before the wind, they went out of sight in an instant.

"They left the land always in the same manner in which they come in

to roost, dropping to the surface of the water immediately on clearing the shore. Notwithstanding their apparent abundance, the Noddies, in point of numbers, sink into comparative insignificance after the arrival of the Sooty Terns.

"I went the round of the bushes and examined the nests of the Noddies. Every available bush was covered with them. I found in one nest a last year's egg bleached perfectly white from exposure.

"The materials forming the nests were always the same: just a few dry twigs from the same bush, which the dung of the birds had in most cases cemented into a tolerably firm mat. Very little seaweed is used, only here and there a small clump of gulf-weed. Some of the nests are ridiculously small and very few showed any appreciable concavity. There were no remains of old nests on the ground.

"My first care on examining the nests was to look for traces of the broken shells (sea shells) 'speckled and spotted like the eggs,' said to be always found in the nests of the Noddies (Gosse, *Birds of Jamaica*, p. 436.) Very many nests, indeed, contained a few small shells (univalves) but these were always perfect, and, though of various species, quite devoid of the speckled and spotted appearance of a Noddy's egg. These shells I judged to be merely the discarded tenements of the hermit-crabs which infested the bushes and were constantly engaged in clambering among the branches and between the interstices of the nests. I must have examined scores of nests, many of them apparently old ones, but did not see *any* exceptionally large or at all approaching to the 'masses nearly two feet in height,' described by Audubon. For further notes respecting the nesting habits of this bird I am indebted to the kindness of Captain Cole, the lessee of the Cays, who writes me on the 2nd May as follows:

"The birds did not begin to arrive before the 26th (April) and are now beginning to lay. The Noddies like those you captured, i.e., brown-black, with white caps, are about one-half the number of birds arriving; the others are larger, brown-black on back and top of wings, all under body from beak to tail, white.... On their first arrival they are for the first two days flying about in great excitement choosing their mates (?); as soon as this is done the hen chooses her spot for laying, either in the bushes or on the ground (the dark Noddies in the bush, the large birds, white underneath, on the ground). The hen then keeps guard over every bit of material brought by the male for the nest, and if she does not keep a sharp lookout the others steal her sticks, dry seaweed, and bits of bush.'

"The Noddy has occurred in Kingston harbor. I once had one brought to me living, but in a very exhausted condition, as it was captured while seated on the bow of a small yacht moored near the shore at Rae Town. It lived for a few days, feeding eagerly on scraps of fish, etc. On a recent visit to Rackum Cay near Port Royal, two of these birds were seen and one was shot. The wind at the time was very high and squally, with occasional showers of rain; a state of weather. I have noticed, that invariably precedes the appearance near Kingston of most of the rarer examples of the Laridæ.

"Of the enormous number of eggs taken annually at the Morant and Pedro Cays, those of the Noddy form perhaps not more than a third part. They are usually longer than those of the Sooty Tern, and are also more pointed at the smaller end. The shell, too, has a rougher surface and is 'chalky' to sight and touch. Six specimens are now before me; they vary from dull white to buffy, sparsely blotched and spotted with dark brown and a few neutral tint markings, chiefly round the larger end, where they usually form a ring. Average measurements, 2 by 1.40 in."

6. *Hydrochelidon nigra surinamensis* (Gmel.). BLACK TERN.—Mr. Hill records this as one of the Terns frequenting the Cays. (Gosse, *Birds of Jamaica*, p. 437.)

Mr. Taylor says: "This species I have not met with. It is said to frequent the Morant and Pedro cays, where it is known to the egg gatherers as the 'Redshank.' It is described as breeding in small colonies on the sand apart from the Sooty Terns. I have some eggs, labelled 'Redshank,' sent to me from the Morant Cays in May of last year. Their size almost twice that of two specimens from Turks Island alone renders their identity doubtful; yet the description of the bird (black with red legs) taken at the time will apply to no other species."

While this evidently does not relate to the species under consideration, I place it on record for the consideration of future workers in this field.

7. *Sterna anæthetus* Scop. BRIDLED TERN.—The following is from Mr. Taylor's notes: "During my stay at Port Henderson, small colonies of this species were noticed on three of the outlying cays in the group near Port Royal. On the smallest of them, a mere pile of loose coral rock, totally devoid of vegetation, there were about a score of birds. We did not know of their presence until in close proximity to the cay, when the greater number rose to flight. A few, however, remained sitting until a landing was effected. Almost immediately my companion found a young bird in down; it lay on a slab of the rock, uncovered.

"We judged, from the actions of the birds (which kept flying round overhead, crying plaintively), that incubation was still going on, especially as on looking among the rocks at one or two places, they showed unusual excitement, swooping down close to our faces and making attempts to alight. We failed to find eggs, though we searched long and carefully; if there were any, they were well concealed, and in many places the passages between the rocks reached down to more than an arm's length. We did not find so many birds on the next cay, not more than twelve or so perhaps. They all kept to the south and eastern sides where the shores were covered with the same loose coral rock; like the last colony they only flew off on our landing.

"One bird flew up almost from our feet, and after a little search I found the single egg under a slab of the rock, one end of which resting on another and higher piece of rock, and the other on the sand, formed a sloping roof that effectually concealed bird and egg. On South-east Cay, the outermost one of all, there was another and larger colony, and here too the birds showed great reluctance to leave the land, alighting again almost

immediately after our departure. I have never seen this Tern associating with any other species; on some mornings, soon after daybreak, a few were seen passing over to the harbor, but as a rule I rarely met with them away from the cays above mentioned. The egg in my possession, which was slightly incubated, measures 1.60 by 1.20 in. It is dull white, closely and uniformly covered with small brown and pale lavender markings. Taken 18th June, 1891, from Southern Cay, near Port Royal. Like the Sooty Tern, this species apparently lays only a single egg."

8. *Sterna fuliginosa Gmel.* SOOTY TERN. EGG BIRD.—Recorded by Gosse at Bluefields, Jamaica, and at Pedro Cays (Birds of Jamaica, p. 433).

From Mr. Taylor's notes I transcribe the following: "I have not met with this species in the harbor of Kingston or among the cays outside Port Royal, where probably it is replaced by *S. anæsthetus*. During severe storms many sea birds are blown inland, and in looking over my notes for 1887 I find the following passage: 'August 20. This morning a statement appeared in one of the newspapers to the effect that thousands of 'Boobies' were seen in an apparently exhausted condition, sitting around the large water tanks at Cavaliers. The island was visited during the previous night by a cyclone, and these birds may have been blown over from the Morant Cays or some other similar locality.' The birds are reported to have frequented the tanks for several days. I did not see them while they were there, but for many days after small flocks of Terns passed over towards the south; so far as I could see they were all Sooty Terns.

"Whether the Sooty Tern retires to rest at night, and where, are points I cannot decide with any certainty. It is a common belief, however, among the egg gatherers, that this species never alights except during incubation.

"The melancholy wailing cries that I used to hear at the cays long after the Noddies had settled to roost may have been those of this species, and on questioning the men they answered me that they were the cries of the 'egg-birds.'

"During all the time I spent at the cays no living example of this bird came under my observation, except when, almost out of sight of land on the passage to Kingston, small flocks were noticed fishing in company with Noddies and Boobies. Yet they must frequently be in the near vicinity of the cays, for on more than one occasion I have found remains of freshly killed birds, the work, doubtless, of the Duck Hawks, a pair of which birds were resident on one of the smaller cays.

"Eggs vary from dull bluish white, through all shades of cream to a deep rich buff, and exhibit an almost endless variety of markings, from small and uniform dark brown spots to bold, rich, sienna-colored blotches, with numerous underlying marks of lavender and neutral tints. Average measurements, 2 by 1.50 in.

"The yolk is bright orange-red, in marked contrast to that of the egg of the Noddy Tern, which is dull pale yellow, a circumstance that appears to have escaped the notice of most observers."

9. *Sterna antillarum* (Less.). LEAST TERN.—Recorded by Mr. Hill in Kingston Harbor. (Gosse, Birds of Jamaica, p. 437.) Mr. Taylor has not met with this species, nor have I personally observed it.

10. *Sterna dougalli* Mont. ROSEATE TERN.—There are records of this species from the coast of Cuba, Porto Rico, and a number of the smaller islands. Small Terns seen off Port Royal, which I was unable to obtain, I thought to be this form. Mr. Taylor says: "I believe this species to have been shot during one of my visits to Rackum Cay in June last."

11. *Sterna hirundo* Linn. COMMON TERN.—Mr. Taylor says: "I have the skin of a Tern, shot at Rackum Cay, that I can ascribe to no other species than *Sterna hirundo* Linn. This bird occurred frequently among a small flock of other Terns that daily resorted to the spit of sand forming the cay. Several were shot. Skin, ♂, 11 July, 1891."

12. *Sterna sandvicensis aculeiflvida* (Cabot). CABOT'S TERN.—Mr. Taylor's record below seems to be the first absolute information of the occurrence of this species from Jamaica. Mr. Cory gives its distribution in the West Indies as "Bahamas and Antilles" (Cory, Birds of the West Indies, p. 277).

Mr. Taylor says: "*Sterna sandvicensis aculeiflvida* is perhaps the most abundant species among the cays and in the harbor of Kingston, where great numbers may be seen at most times perched on the stakes marking the ship's channel."

13. *Sterna maxima* Bodd. ROYAL TERN.—Mr. Taylor says: "This species is common at Port Royal Cays and in Kingston Harbor. Said to breed at the Morant Cays."

He adds: "Among the Terns shot at Port Royal I feel tempted to include *Sterna elegans*, but having no specimens now in my possession, its notice here is open to question." This is more probably *Sterna tschegrava* Lepech.

14. *Larus atricilla* Linn. LAUGHING GULL.—Observed near Port Royal. "Frequents the Kays" (Gosse, Birds of Jamaica, p. 437).

Mr. Taylor says this species was shot at Rackum Cay and is not uncommon and breeds at the Morant Cays.

15. *Phaethon æthereus* Linn. RED-BILLED TROPIC BIRD.—I did not meet with this species though it was described to me by fishermen on the north side of the island, so as to be readily recognizable. They said it was seen generally late in the summer or early in the autumn after severe storms. Gosse speaks of it as a "constant frequenter of the Pedro Kays" (Birds of Jamaica, p. 431).

16. *Phaethon flavirostris* Brandt. YELLOW-BILLED TROPIC BIRD. BOOBY.—Common resident on the north shore of Jamaica. Breeds in February. For detailed account of the occurrence and habits of this species see Auk, Vol. VIII, No. 3, pp. 249-256.

17. *Sula piscator* (Linn.). RED-FOOTED BOOBY.—Recorded by Gosse. (Birds of Jamaica, p. 418.) Mr. Taylor says: "I have not seen *Sula piscator* (Linn.) alive. A mounted specimen in the collection of birds at the Museum of the Jamaica Institute is labelled Pedro Cay (no date), Coll. J. J. Bowen."

18. *Sula sula* (Linn.). BOOBY.—Recorded by Gosse as common at Bluefields Bay. (Birds of Jamaica, pp. 417, 418.)

Mr. Taylor says: "*Sula sula* (Linn.) was seen in numbers at sea between Kingston and the Cays. Mounted specimens in the Institute collection are labelled 'Pedro Cay, collector J. J. Bowen, Esq.' No date."

19. *Sula cyanops* (Sundev.). BLUE-FACED BOOBY.—"West Indies." (Cory, Birds of the West Indies, p. 272.) There are records from San Domingo and the species probably occurs with the others at Pedro Cays.

20. *Pelecanus fuscus* Linn. BROWN PELICAN.—Common resident species and generally distributed in suitable localities about the island. I saw many off Port Royal, and at Port Antonio noted them several times. At Priestmans River I frequently observed this species passing along the coast in flocks varying from three to sixty individuals. Mr. Taylor says: "*Pelecanus fuscus* Linn. is an abundant species. In October last Capt. Young, of H. M. S. 'Pylades,' found young in the nests among the mangroves at Drunkenman Cay near Port Royal."

21. *Fregata aquila* (Linn.). MAN-O'-WAR BIRD.—A common resident. I saw these birds at Port Royal, at Port Antonio, at Priestmans River, and at many other points along the coast of the island. I have been unable to ascertain at what point these birds breed but it can not be distant, as the birds are present the year around.

Mr. Taylor says this species is "Common, though not so often seen as the Pelican. Just behind Fort Augusta in the harbor is a dense isolated clump of mangroves forming a small island some little distance from the shore. It is a favorite roosting place of Frigates and Pelicans; in fact, the only one near Kingston resorted to by the former. Passing this island one morning, I counted more than eight Frigates and twice as many Pelicans sitting on the overhanging branches; they allowed a very near approach before taking flight. I have been unable to gather any reliable particulars relating to the breeding of this bird near Kingston."

22. *Anas boschas* Linn. MALLARD.—"Accidental in Jamaica." (Cory, Birds of the West Indies, p. 262.) Recorded by Richard Hill, Esq. (Gosse, Birds of Jamaica, p. 408).

23. *Anas obscura* Gmel. BLACK DUCK.—Recorded from Jamaica by Mr. Cory. (Birds of West Indies, p. 262.) Mr. Cory adds, "It is uncertain whether the Dusky Duck, which, it is claimed, occurs in Jamaica, is *Anas fulvigula* Ridgw. or this species."

24. *Anas strepera* Linn. GADWALL.—Probably a regular winter visitor to the island.

25. *Anas maxima* Gosse. GREEN-BACKED MALLARD.—Gosse refers to this as "well known to the negro gunners" at a point "near Savanna le Mar," and did not consider it a hybrid. (Gosse, Birds of Jamaica, pp. 399, 400.)

26. *Anas americana* Gmel. BALDPATE.—There are several records of this species occurring in winter in Jamaica. (See Cory, Birds of the West Indies, p. 264.) From Mr. Taylor's notes: "This species is said to be accidental in winter in the West Indies (Cory, B. W. I., p. 264). I

examined several examples of this species that were offered for sale in Kingston in the winter of last year, when they appeared to be almost as numerous as *Anas discors*."

27. *Anas carolinensis* Gmel. GREEN-WINGED TEAL.—Recorded from the Island by Gosse (Birds of Jamaica, p. 408).

28. *Anas discors* Linn. BLUE-WINGED TEAL.—Common in the town markets in the winter, according to Gosse (Birds of Jamaica, p. 401). I did not meet with the species or see it exposed for sale. Mr. Taylor says it is "abundant in certain favored places during the winter months and is the most common species brought in to Kingston for sale. It is probably resident."

29. *Spatula clypeata* (Linn.). SHOVELLER.—Apparently casual or accidental in winter. I did not observe it.

30. *Dafila acuta* (Linn.) PINTAIL.—There are numerous records of its occurrence on the island.

31. *Aix sponsa* (Linn.). WOOD DUCK.—Said to be of regular occurrence in Jamaica in winter, but is apparently rare.

32. *Aythya americana* (Eyton). REDHEAD.—An uncommon winter visitant.

33. *Aythya vallisneria* (Wils.). CANVAS-BACK.—"Recorded from Jamaica" (Cory, Birds of the West Indies, p. 207).

34. *Aythya affinis* (Eyton). LESSER SCAUP DUCK.—"Recorded from Jamaica" (Cory, Birds of the West Indies, p. 266).

35. *Aythya collaris* (Donov.). RING-NECKED DUCK.—"Jamaica in Winter" (Cory, Birds of the West Indies, p. 267).

36. *Oidemia perspicillata* (Linn.). SURF SCOTER.—"Claimed to have occurred in Jamaica" (Cory, Birds of the West Indies, p. 268).

37. *Erismatura rubida* (Wilson). RUDDY DUCK.—Though this bird is said to be of regular winter occurrence in Jamaica, I think that it must be quite uncommon, and that the following species has been confounded with it.

38. *Nomonyx dominicus* (Linn.). MASKED DUCK. QUAIL DUCK.—In the ponds about Priestmans River I met with this species on two occasions, and from native hunters learned that it was not at all uncommon, especially early in the Fall.

At Priestmans River, 9th February, 1891, I took an adult male, No. 11000, of *Nomonyx dominicus*. The bird was in a small and very shallow pond, and did not attempt to fly away upon being approached, but tried to hide in some thin grass growing where an old stump of a tree projected from the water, and remained so motionless as almost to escape notice, though not more than twenty feet away. It was killed with a light load of dust shot.

This bird differs from the general descriptions that I have found in having the black of the head unbroken by chestnut bars, and in having in the angle of the lower mandible a conspicuous though small triangular white spot.

At the same locality, 26th February, 1891, I took a male apparently of

the first or second year, No. 11284, which differs from the bird of Feb. 9 (No. 11000) in having the black of the head broken by mottled bars of black and chestnut, one above and one below the eye, and has no white patch in the angle of the lower mandible. The black of the head is not so intense as in No. 11000. This bird was shot in a shallow pond just above the house where I had not been for some days. A boy told me there were at least three small Ducks in this pond and he thought four. He had seen them two or three times in the last few days. On going to the pond, one end of which has a dense growth of rushes, two Ducks were seen, but only one killed, the other escaping wounded into the grass. The testes of the bird taken were rather more than a quarter of an inch long and an eighth of an inch in the smaller diameter. These little Ducks do not seem at all rare on the Island, and have much the habits of the Grebes, frequenting small fresh water ponds and depending rather on hiding in the grass or diving than on flight to escape pursuit. They are said by the native gunners to breed at various points on the island.

39. *Chen hyperborea* (Pall.). LESSER SNOW GOOSE.—“Accidental in Jamaica.” (Cory, Birds of the West Indies, p. 259.)

40. *Branta canadensis* (Linn.). CANADA GOOSE.—“Recorded from Jamaica.” (Cory, Birds of the West Indies, p. 260.)

41. *Dendrocygna arborea* (Linn.). BLACK-BELLIED WHISTLING DUCK.—Said to be common at points on the island and to breed in the mangrove swamps. (Gosse, Birds of Jamaica, pp. 395-399.)

42. *Dendrocygna autumnalis* (Linn.). BLACK-BELLIED TREE DUCK.—“The Red-billed Whistling Duck (*D. autumnalis*) though much less common in Jamaica than the preceding (*D. arborea*) is found there in some seasons as an autumnal visitant from the Spanish Main.” (Gosse, Birds of Jamaica, p. 398.)

43. *Phœnicopterus ruber* Linn. AMERICAN FLAMINGO. RED FLAMINGO.—The visits of Flamingoes to the coast of Jamaica are now very rare, and, so far as I was able to ascertain, none breed at present on the island. Formerly the visits of these birds seem to have been of regular occurrence.

[To be continued.]

TERTIARY FOSSILS OF NORTH AMERICAN BIRDS.

BY R. W. SHUFELDT, M. D.

UPON examining a collection of fossil birds from the Silver Lake Region of Southwestern Oregon, recently submitted to me by Professors E. D. Cope and Thomas Condon for description,

I have been enabled to identify fifty-one (51) species, thirteen (13) of which I find to be new to science. Out of these fifty-one species Professor Cope had on a former occasion published accounts of ten of them—two of which were new—in addition to the thirteen the present writer has been enabled to describe. Among other places, those described by Professor Cope appeared in an article contributed by him to the 'American Naturalist' in November, 1889, and so will not be especially dwelt upon here.

Abundant remains of *Æchmophorus occidentalis* occur in this remarkable collection of some 1500 specimens, and to a lesser degree do we find the fossil bones of *Colymbus holballi*, *C. auritus* (?), *C. nigricollis californicus*, and *Podilymbus podiceps*. Thus far, it is strange to say, no remains of any species of Loons have been met with, nor any large extinct Divers allied to them. Nor were any of the *Alcidæ* discovered. This is a significant fact, which to the student of the migration of animals during tertiary time, may prove interesting.

Gulls apparently were abundant, and I have been enabled to identify *Larus argentatus smithsonianus*, *Larus philadelphia*, *Xema sabinii*, and another which was most probably *L. californicus*. There were at least two extinct Gulls, and they were of moderate size, and probably not very unlike existing forms, which I have named *Larus robustus* and *Larus oregonus*.

The list of *Laridæ* is completed by *Sterna elegans* (?), *Sterna forsteri* (?), and *Hydrochelidon nigra surinamensis*.

Steganopodes appear to be limited to that big Comorant already described by Cope, the *Phalacrocorax macropus*, and to the probable occurrence of the Pelican, *Pelecanus erythrorhynchus*, of which I found only a part of an ulna in the collection, not quite enough in my opinion to absolutely prove its existence in the geological horizon under consideration. Nevertheless the bone belonged to a Pelican, which was not *fusca*, and as the other species is abundant on those Oregon Lakes at the present writing it was most likely the other species, that is, *P. erythrorhynchus*.

As they are today, Ducks, Geese, and Swans were very plentiful, and with but one or two exceptions they are all identical with existing species. I found more or less abundant fossil remains of *Lophodytes cucullatus*, *Anas boschas*, *A. americana*, *A. carolinensis*, and *A. discors*, and the remains of another Teal which I believe to be *Anas cyanoptera*. *Spatula clypeata* was a very

abundant Duck, and *Dafila acuta* was also found, as well as *Aix sponsa*, *Aythya marila nearctica*(?), *Glaucionetta islandica*, and *Clangula hyemalis*. There was an enormous Goose which I have named *Anser condoni*, in honor of Professor Thomas Condon of the University of Oregon, who was the first naturalist to discover any fossil remains of birds in that region. *Anser condoni* was a species as large again as the Canada Goose, probably exceeding it in size, as much as the Canada Goose exceeds in size one of our smallest Brant. There was *Branta hypsibatus* of Cope, and a new Brant which I have called *Branta propinqua*. Many fossil bones also occur of *B. canadensis*, *Anser albifrons gambeli*, *Chen hyperborea*, and the Swan described by Cope, or *Olor paloregonus*. In all an exceptionally fine series of fossil Anserine birds.

Of the various discoveries made none are more interesting than the fossil remains of a new species of Flamingo,—a form now extinct. Judging from its bones, this species was somewhat longer limbed than *P. ruber*, but not so robust as it in the body. I have named it *Phanicopterus copei*, in honor of Professor E. D. Cope of Philadelphia.

A small Heron was also discovered, extinct as well as new, which I have called *Ardea paloccidentalis*. Its remains are by no means plentiful. There were also two Coots, our common form, the *Fulica americana*, and a new extinct, smaller one, which I have designated as *Fulica minor*.

Among the Limicolæ I found the fossil bones of *Phalaropus lobatus*, and it has proved to be the only shore bird thus far discovered by the collectors. Gallinæ, however, were abundant, and rich, apparently, in species. Beautiful fossil bones of *Tympanuchus pallidicinctus*, as well as *Pediocætes p. columbianus* were readily recognized in the collection.

In addition to these was a larger and stouter *Pediocætes*, which I have dedicated to my friend Mr. F. A. Lucas of the U. S. National Museum, and called it *Pediocætes lucasi*; but there was also a much smaller type, likewise extinct, and new to science, which I have named *Pediocætes nanus*. Finally, we have an entirely new genus, which I have created to contain the thus far sole species representing it. This species was a large Grouse to which I have given the name of *Paleotetrix gilli*, in honor of Dr. Theo. Gill of the Smithsonian Institution.

Fossil bones of two extinct Eagles were also found in the collection. One of these, which I have called *Aquila pliogryps*, appeared to have been a large species of slender build, and may have had rather the habits of an active Falcon than those of the more sluggish Eagles, such as the common white-headed one for example. The other extinct form I have called *Aquila sodalis*, and it was a smaller form than *Aquila pliogryps*, being more nearly affined to our existing types,—perhaps to such a species as the Golden Eagle for example.

Bubo virginianus, among the Striges, is represented by an almost perfect specimen of the carpo-metacarpus and a toe-joint. The former is identical in character in all particulars with the corresponding bone in a skeleton of *B. v. subarcticus* with which I have compared it.

Remains of Passeres were not abundant in the collection, and I found but two extinct species, both of which are new to science. They were a Blackbird and a Raven. These I have designated respectively as *Scolecophagus affinis* and *Corvus annectens*. The last named was a Raven considerably smaller than any of our present day Ravens as found in the avifauna of the United States.

When printed, my memoir describing this very valuable collection will make some seventy-five quarto pages, and be illustrated by figures on stone of all the fossil bones of the new or otherwise interesting forms.

The work will of course take into consideration a great deal which will be impossible to set forth here, as the present paper pretends to nothing more than a notice of the collection as a whole. What I have given, however, will be sufficient for the thoughtful student in ornithology to gain some idea of the avifauna as far back as the Pliocene, in so far as what is now called South-western Oregon, was concerned. It will be observed that even in that horizon many of the species were identical with those now existing, and in the case of the extinct ones, they were forms that in the majority of instances, would not be out of place even in our present day avifauna, belonging as they did in most instances to modern genera and groups.



FORMER AND PRESENT RANGE OF THE CAROLINA PAROQUET.

(Boundary of former range shown by the heavy line; present distribution by solid black.)

THE CAROLINA PAROQUET (*CONURUS CAROLINENSIS*).

BY EDWIN M. HASBROUCK.

FOR MANY years it has been a recognized fact that the Carolina Paroquet (*Conurus carolinensis*) is fast approaching extermination, the last quarter of a century having witnessed such rapid diminution in its numbers and so great a restriction in its range that, "in the opinions of the best judges, twenty years hence it will be known only in history and from museum specimens." In view of this it has seemed desirable to present a monograph of the sole representative of the Parrot family in the United States, illustrated with a map, showing its former range, and as nearly as possible its present distribution.

The genus *Conurus* is exclusively American, and was first characterized by Kuhl in 1820, who referred to it eighty-one species. In 1610-12 the Carolina Paroquet was first mentioned by Strachey,* with the customary brevity and crudeness of the time, and in 1758 Linnaeus gave the first systematic description of it under the generic name of *Psittacus* (all Parrots, from whatever country, being at that time grouped in this genus). Kuhl, however, was the first to separate the Paroquets from the true Parrots, and his list of eighty-one species by subsequent eliminations has been reduced to about fifty, distributed over Mexico, Central, and the whole of South America, with the present species—by far the most beautiful of all—as the sole representative of the genus in the United States.

In comparing the disappearance of the Paroquet with the rapid extermination of other well known birds, one cannot fail to see a similarity between the several cases, and note in each the ruthless and wanton destruction wielded by the hand of man. The Great Auk and Labrador Duck are birds of the past, yet fifty years ago they were plentiful on our eastern coast. The Passenger Pigeons formerly swarmed by millions throughout the States east of the Plains,—today they are a rarity, and their nesting places, which once excited the curiosity of the world, and served as a source

* The Historie of Travaile into Virginia Brittania, by William Strachey, 1610-12.

of revenue to hundreds, are now either abandoned or so far removed from the haunts of man as to be unknown.†

As early as 1832, Audubon speaks of the Paroquet as being not nearly so common as formerly, and from that time till the present they have been becoming less and less numerous until now they are confined to limited areas, and even here are comparatively scarce. In glancing at that portion of the map bounded by the heavy line (representing the area over which they formerly extended), we are amazed at the extent of territory they formerly covered, and can form some little idea of the persecutions to which they have been subjected to totally drive them from their haunts into the isolated regions they are known to inhabit at present. These persecutions (according to all accounts) were not wholly unmerited, as Audubon and Wilson both speak of the destruction caused by these birds among fruit orchards, seemingly out of pure mischief. The former relates an instance of which he himself was an eye witness: — The orchard of a certain fruit grower was visited at the season when buds were developing into fruit, by an immense flock of Paroquets, and in a few hours was completely stripped by them; the birds working in regular manner from tree to tree, and failing so far as he could observe to make use of any of the spoils as food. Naturally, he continues, such depredations were not to be perpetrated with impunity, and retaliation was meted out in the shape of death to as many as could be killed. Unfortunately for the evil doers, a habit peculiar with them is that of knowing little or no fear of fire arms and the wounding of an individual is but the signal for the practical extermination of the entire flock: returning again and again to the scene of slaughter, they fly screaming over their dead companions, falling an easy prey to the marksman who has but to load and fire at pleasure until the numbers become too few or too scattering to make it worth the while. This one peculiar trait is what has apparently led to their rapid disappearance, for the punishment, merited to a certain extent as previously stated, was not visited with a due amount of discretion—which may be said to be the rule rather than the exception in the case of an irate farmer with a shot gun. This, coupled with the shooting for sport (?) by pot-hunters, etc., has practically exterminated one of the most beautiful birds that graced the American continent.

† Auk, VI, 1887, p. 285.

Happily the species is still extant, but in what numbers, or how long it will continue to exist it is of course impossible to say. In the western part of the Indian Territory, and in South Florida, the birds are still to be found, but in regions so inaccessible, and so far from human habitations as to be almost unknown. In the winter of 1888-89, Mr. F. M. Chapman made careful investigations in Florida upon which is based the latter part of the above statement; while, as regards the Indian Territory, a considerable amount of reliable information assures us that it was found as recently as 1889.

Turning now to the map we find that of the forty-four States and five Territories comprising our country, there are records of the occurrence of this species in twenty-two States and one Territory, and the almost absolute certainty of its having strayed into at least five more, making a total of twenty-seven States and one Territory over which it formerly ranged. If we take the forty-third parallel as the northern limit, the twenty-sixth as the most southern, the seventy-third and one hundred and sixth meridians as the eastern and western boundaries respectively, we will have included very nearly all the country in which the Paroquet formerly lived. It will of course be understood that to lay down an exact boundary* for any one species is impossible, as where it occurs near the border of a certain State, there is no apparent reason for its not crossing the few intervening miles of country and paying occasional visits to adjacent States, and unless accidentally observed by some one familiar with the importance of such visit the occurrence would go unrecorded. Therefore where we have a record of the Paroquet as formerly common over the whole of a certain State, we may reasonably assume that the border of an adjoining one was occasionally visited, although no record may exist of its having been observed. As an instance both New Jersey and Delaware are without record, yet Maryland and Pennsylvania were formerly visited by them, and there is evidence of its occurring as far north as central New York; in the face of which it is highly probable that both of the above mentioned States were resorted to although not included in the scope of distribution.

In further explanation it will perhaps be best to state, that in drawing the boundary line of the former range I have used the extreme records as boundaries, and a line drawn from one to the other as the extent of the former distribution; it is highly probable, however, that, in some of the extreme records, the birds followed

up some one of the river valleys without wandering over intermediate territory.

As regards the general habits of the Paroquets, there is apparently nothing of interest to be added to the accounts already published. That they are a hardy race is evinced by the appearance of a flock in midwinter at Albany, New York. Nuttall states* that they are so hardy as to appear at St. Louis in the depth of winter, while Wilson recounts† his meeting with a flock on the Ohio in a snow-storm, the birds “flying about like Pigeons and in full cry.” This is so greatly at variance with the general habits of Parrots, which are always looked upon as birds of a warm climate, that it does not seem out of place to quote these statements in the present paper.

As to the breeding habits, we have two accounts widely different from each other, both of which, all things considered, we are bound to accept. Audubon and Wilson were the first to inform us concerning the nest and eggs, both of whom distinctly state that they breed in companies in hollow trees. Since the time of these writers, owing to various conflicting accounts, their manner of nesting has been considerably in doubt, but in 1889 light was thrown on the subject by Mr. Wm. Brewster, who wrote‡ as follows: “While in Florida during February and March, 1889, I questioned everybody whom I met regarding the nesting of the Parrakeet. Only three persons professed any knowledge on this subject. The first two were both uneducated men—professional hunters of alligators and plume birds. Each of them claimed to have seen Parrakeets’ nests, which they described as flimsy structures built of twigs and placed on the branches of cypress trees. One of them said he had found a nest only the previous summer (1888), while fishing. By means of his pole he tipped the nest over and secured two young birds which it contained. This account was so widely at variance with what has been previously recorded regarding the nesting of this species that I considered it, at the time, as a mere fabrication, but afterwards it was unexpectedly and most strongly corroborated by Judge R. L. Long of Tallahassee. The latter gentleman . . . assured me that he had examined many nests of the Parrakeet built precisely as above des-

*Man. Orn., I, 1832, p. 546.

†Am. Orn., III, 1811, p. 90.

‡Auk, VI, 1889, p. 336.

cribed. Formerly, when the birds were abundant in the surrounding region, he used to find them breeding in large colonies in the cypress swamps. Several of these colonies contained at least a thousand birds each. They nested invariably in small cypress trees, the favorite position being on a fork near the end of a slender horizontal branch. Every such fork would be occupied, and he has seen as many as forty or fifty nests in one small tree. Their nests closely resembled those of the Carolina Dove, being similarly composed of cypress twigs put together so loosely that the eggs were often visible from the ground beneath. The twigs of the cypress seemed to be preferred to those of any other kind of tree. The height at which the nests were placed varied from five or six feet to twenty or thirty feet. Mr. Long described the eggs as being of a greenish white color, unspotted. He did not remember the maximum number which he had found in one set, but thought it was at least four or five. He had often taken young birds from the nest to rear or to give to his friends." It seems difficult to reconcile such testimony with the statements of Audubon and Wilson, already alluded to, yet it may be that, like some of our Owls, the Paroquet nests, according to circumstances, either in hollows or on branches.

In the collection of the National Museum is a series of eight eggs; the majority of them were laid in confinement, the remainder coming from Louisiana. These are pure white in color and average 27×35 mm.

According to Barton, writing in 1790, a flock of Paroquets appeared in January about twenty-five miles northwest of Albany, New York, causing great alarm among the simple Dutch folk who looked upon the advent of the birds as indicative of coming evil. Audubon also states,* that about 1807 they could be procured "as far northeast as Lake Ontario." This is presumably the most northern record for the species, and these are the only instances known of its occurrence in the Empire State. New Jersey and Delaware, as before stated, are without records, but in 1832 Nuttall informs† us that "straggling parties have been seen in the valley of the Juniata in Pennsylvania"; and Turnbull, in 1869, writes‡ that it occurs at rare intervals in the southern part of the State.

* Birds of Am., Vol. IV, p. 309.

† Man. Orn., I, 1832, p. 546.

‡ Birds of Eastern Pa., p. 4, 1869.

For Maryland and the District of Columbia the records are limited to the flock that appeared at the Capital in 1865; this flock, according to Smith and Palmer,* was a large one, as it left numbers of its company with the gunners who were on the marshes at the time of its appearance; but unfortunately there is evidence of only one specimen having been preserved.

For the Virginias I quote from the admirable paper by Rives ('Birds of the Virginias')† who says: "Although a flock was seen as recently as 1865 [the same as that recorded for Maryland and the District], it can no longer be regarded as a Virginia bird, though formerly not uncommon." Catesby also mentions‡ the Paroquet in 1731 as ranging as far north as Virginia, but, as was usual at that time, omitted any definite locality. North Carolina has but one record—that by Catesby, but in South Carolina Burnett gives it§ as being resident in the Pine Barrens in 1851, while Coues in his 'Synopsis'¶ writes: "This species is given in Prof. Gibbs' list, and appeared to have been in former times a common bird, but its occurrence has not been noted for years." Georgia furnishes a good example of a missing link in the chain of history; very little systematic work has been done in this State, and there appear to be no lists of the birds inhabiting it. It is plainly evident that the species formerly lived there although no record of it may exist.

Florida was at all times the home of the Paroquet, but it would appear from Taylor's account¶ that as recently as 1862 they were common throughout the State. In 1874 they were becoming scarce even here, although Ober reported** them as still abundant along the Upper Kissimmee River, and a few flocks seen near Okeechobee. In 1875 they visited Volusia County in immense numbers††, and in 1880 a large flock made its appearance, since when none have been seen in that locality. In 1885 a small colony was known to breed in Waukulla swamp, about

*Auk, V, 1888, p. 148.

†Proc. Newport Nat. Hist. Soc., Doc. VII, 1889-90, p. 64.

‡Nat. Hist. Carolina, Florida and Bahamas, 1731, p. 11.

§Proc. Bost. Soc. Nat. Hist., IV, 1851, p. 116.

¶Proc. Bost. Soc. Nat. Hist., 1868, p. 119.

¶Ibis, IV, 1862, p. 127-142, 197-207.

**Forest and Stream, 11, 1874, p. 162.

††Forest and Stream, XXIV, 1885, p. 487.

twenty miles from Tallahassee,* and it may be supposed with a reasonable amount of certainty to occur there at present in moderate numbers. Four handsome specimens of this Parrot in my collection were taken at Thonotosassa, Hillsborough County, on April 25, 1887, by Mr. Chas. Steacy, who writes me that these are the only ones he has seen for some time, and that the occurrence of the birds in that vicinity has not come under his notice since the above date. Brewster,* writing in 1889, affirms that "A few are still found as far north as the Weekiva River bottom, while south of Kissimmee they are still actually abundant over a region of considerable extent." If this be true it is evident that the region must be confined mainly to the interior, as the value of the birds is so well known that had they appeared on the coast, some of the many collectors would have been almost certain to have observed them. In partial support of both Mr. Brewster's statement and my theory, the following from Mr. W. E. D. Scott† may be of value: "With the settlement of the State this species has gradually disappeared till at the present time it must be regarded as a rare bird, though once so abundant and conspicuous. In the winter of 1875-76 the birds were very abundant at Panasoffkee Lake, and the same season I saw many flocks on the Ocklawaha River. About Tarpon Springs they were formerly very common. . . . For the last five years but *one* small flock of some ten birds has been seen in this vicinity. . . . At a point in Hernando County, in the vicinity of a place called Linden, the birds are still fairly common, and I have procured a series from that place the past winter (1888-89). . . . Mr. Atkins writes me: 'I have in my collection several specimens, and have seen others from time to time that were taken in the Okeechobee region where the birds seem to be fairly common.'"

In the spring of 1889, Mr. F. M. Chapman made careful search for the Paroquet on the eastern coast of Florida in the vicinity of Micco.‡ It was his good fortune to find "in all about fifty birds, in flocks of from six to twenty," thus proving that they are still to be found in the wilder and less thickly settled portion of the State, while Mr. F. S. Risely, of Rockledge, in-

*Auk, VI, 1889, p. 337.

†Auk, VI, 1889, p. 249.

‡Proc. Linn. Soc. N. Y., 1890, p.

forms me that he had one specimen brought to him the past winter (1890-91).

In 1859, Gosse speaks* of the species in such terms as to leave us somewhat in doubt as to whether it was of common occurrence in Alabama at that date, while in 1878 (the latest record from the State), Mr. N. C. Brown refers to it† as being rather uncommon in the vicinity of Coosada during his stay, and invariably quite shy.

The following account by Prof. Wailes‡ for Mississippi is probably as full as any, and appears to be about the only published record for that State: "The Paroquet was formerly very numerous, and often resorted in large flocks to inhabited districts and made himself familiar with the apple orchards. Now (1854) they have become quite scarce and shy, and are seldom seen in flocks of more than half a dozen together." In 1875, Beckham writes,§ "Judge Lawrason, who lives in the country near Bayou Sara, Louisiana, informs me that as late as 1875 he found the Carolina Paroquet every year at his place, but since that date has neither seen nor heard of any in his locality."

For Texas we have but one record,|| which informs us of its being "Quite numerous in the eastern part of the State in 1853, and confining itself to the timberlands of the large streams." This rather vague statement makes it somewhat difficult to place the boundary line. I have placed it, however, between the Brazos and Trinity rivers,—covering to a large extent the same territory over which the Ivory-billed Woodpecker (*Campcophilus principalis*) formerly ranged.¶

In company with the Texas record is a statement by the same author that the species is to be found in the Indian Territory; while Cooke informs us** that "Formerly numerous flocks were found all over the reservation, but that at present (1885) it is almost extinct in the eastern part of the Territory, though a few are still found around Caddo, while in the western and

* Gosse, Letters from Alabama, 1859, p. 298.

† Bull. N. O. C., IV, 1879, p. 11.

‡ Geol. & Agric. of Miss. 1854, p. 324.

§ Auk, IV, 1887, p. 303.

|| Woodhouse, Sitgreaves's Rep., p. 89.

¶ Auk, VIII, 1891, p. 14.

** Bird Migr., Miss. Val. 1885, p. 124.

middle parts they are almost as common as ever." In 1880 Mr. D. C. Harrison of the Geological Survey was stationed at Spencer Academy, some twenty miles from Caddo; he found the birds very abundant, describing them as appearing in large flocks like Blackbirds, and on his return brought six specimens with him as mementos of the trip. Mr. A. W. Butler, to whom I am indebted for the following recent information, informs me that an army officer stationed at Fort Gibson, saw and recognized a flock in 1889, which alighted in a tree directly over the spot in which he and his men were encamped. This gentleman was acquainted with the birds in their Florida haunts, so that there was no chance for error. He reported the fact to Mr. H. K. Coale, who gave the information to Mr. Butler.

For Arkansas there appears to be but one record, and that by Baird, Brewer and Ridgway in 1874, who speak of the occurrence of the Parroquet in considerable numbers there at that date, and of their former abundance throughout the Mississippi Valley.

Audubon informs us that they were plentiful in Ohio about 1807, and could be procured as far north as Lake Erie. Mr. Butler informs me that about 1832 Mr. W. B. Seward found young birds in a hollow tree-top that had been blown down, in White River Valley, about twenty miles from Indianapolis, Indiana. This record, according to Mr. Butler, is thoroughly reliable, and is probably the most northern breeding ground known. In 1856 Haymond wrote* that they were formerly abundant along the White Water River, but that none had been seen for many years, while in the Report of the Geological Survey of the State, published in 1869, Coxe in his list of the birds of Franklin County, records his seeing "a single flock in June many years ago; and old inhabitants say that in the early settlement of the county they were extremely common."

In the Smithsonian collection is a specimen (No. 12272), without date or locality, taken in Illinois by J. K. Townsend, and Pratten includes it in his list.† In 1889 Ridgway speaks of it‡ as "probably everywhere extinct within our borders, though fifty years ago it was more or less common throughout the State."

Kentucky and Tennessee each have one record. For the for-

* Proc. Phil. Acad. Nat. Sci., 1856, p. 293.

† Trans. Ill. State Agric. Soc. for 1853-54, 1855, p. 606.

‡ Nat. Hist. Surv. Ill., I, 1889, p. 399.

mer, Pindar mentions it* as very common in years gone by in Fulton County, and further states that stragglers are said to have been seen as recently as 1878. Wilson records† it for Tennessee as occurring along the Tennessee River in 1811. It undoubtedly occurred in Tennessee at about the same period as in Kentucky.

In the Smithsonian Report for 1864 (1865, p. 438), Hoy mentions it as occurring above Boonville, Missouri in 1854, while Cooke in his 'Bird Migration in Mississippi Valley' reports it as still present at Fayette in 1885 though almost extinct. Trippe speaks‡ of it as occurring in Decatur County, Iowa, as recently as 1873. A specimen in the Smithsonian collection is labeled "Michigan," without date or exact locality. In southern Wisconsin the birds are said to have been formerly quite common.

Coues, in his 'Birds of the Northwest,'§ speaks of the Paroquet in Nebraska as follows: "Among the more interesting ornithological results of Dr. Hayden's investigations, may be mentioned his discovery that this species is abundant at a higher point than is usually recognized," occurring "along the thickly wooded bottoms as far up the Missouri as Fort Leavenworth, possibly as high as the mouth of the Platte." Goss in 1883 mentions|| it as "formerly common in eastern Kansas, but not met with in the State for several years." Taylor in his 'Catalogue of the Birds of Nebraska'¶ refers to it as "Formerly abundant even in the eastern part of the State, but now rare if found at all."

Coues mentions** the occurrence of the Paroquet in Colorado in the following note: "Mr. E. L. Berthoud, of Golden, Colorado, writes under date of Dec. 2, 1876: 'I saw the Carolina Parrot at this place and at Denver, on the S. Platte in 1860-61, and on the Little Thompson River, Col., in 1862.'" This is the most western record for the species, and the only one, so far as known, for the State.

This enumeration by States enables us to draw a comparison by dates between the abundance and wide distribution of the species

* Auk, VI, 1889, p. 313.

† Am. Orn., 1811, p. 91.

‡ Proc. Bost. Soc. Nat. Hist., XV, 1873, p. 233.

§ Coues, Birds N. W., 1879, p. 296.

|| Birds of Kansas, 1883, p. 20.

¶ Taylor, Cat. Birds of Neb., 1887, p. 114.

** Bull. N. O. C., II, 1877, p. 50.

at an early period, and the proportionally few remaining individuals and extremely limited area of today. In 1790-1805 they ranged at times as far north as Albany and Lake Ontario, New York, and as late as 1869 were known in the East in southern Pennsylvania. Another decade (1878) saw stragglers in the Mississippi Valley as far north as the junction of the Ohio and Mississippi Rivers, while the past ten years has witnessed their being driven almost exclusively to southern Florida and the Indian Territory. So scarce have they become within this latter period, that it would appear safe to give as their present habitat the minimum areas represented in black, which cover the localities of capture or observation for the last five years.

In concluding, I wish to express my gratitude for the kindness shown me in compiling the present paper. More especially am I indebted to my friend, Mr. Robert Ridgway, and to the Assistant Secretary of the Smithsonian Institution, Dr. G. Brown Goode, for the use of the Museum material, and to Mr. A. W. Butler for valuable information from his own still unpublished notes on the same subject. To these gentlemen I wish to express my warmest thanks and appreciation.

RECENT LITERATURE.

Sharpe's 'Review of Recent Attempts to Classify Birds.'*—Of the many important addresses, memoirs, and reports read before the Second International Ornithological Congress held at Budapest in May last, we have space to notice at present only Dr. Sharpe's notable address on the Classification of Birds. Only the first 55 pages, or a little more than one half of the address, is devoted to a review of previous work, the remainder being given to a formal exposition of the author's own views on the subject. The review practically begins with Huxley's 'Classification of Birds,' published in 1867, and thus relates to the work of the last twenty-five years. An epitome, with some critical comment, is given of Huxley's system, of Garrod's scheme (published in 1874), of Forbes's (1884), of Sclater's (1880), of Newton's views (1884), Reichenow's system (1882),

*A Review of Recent Attempts to Classify Birds; an Address delivered before the Second International Ornithological Congress on the 18th of May, 1891. By R. Bowdler Sharpe, LL.D., F. L. S., etc. (Zoological Department British Museum.) Budapest, 1891. (Published at the Office of the Congress.) Roy. 8vo. pp. 90, pl. xii.

of Stejneger's scheme (1885), of Fürbringer's (1888), of Seebohm's (1890), Shufeldt's Classification of the Passeres (1889), Heine and Reichenow's (1882-90), and various other special works and papers bearing on the subject. The various schemes are discussed and compared at some length *passim*, and presented in tabular form for ready comparison. Fürbringer's diagrams are reproduced, and similar ones presented of other systems to further facilitate comparison. In respect to American workers, Mr. Sharpe makes pleasing references to the labors of Coues, Shufeldt, Lucas, and Jeffries, and especially to Stejneger, of whose work he says: ". . . and I must emphatically state my conviction that, with the exception of some of Professor Elliott Coues's essays, there never has been a popular work on birds so well conceived as the 'Aves' volume of the 'Standard Natural History,' or one which, professedly popular in its aims, contains such an amount of sterling new and original work."

Dr. Sharpe prefaces his own scheme with some well-considered remarks on the slow process of building up a natural classification of birds, which he compares to the construction of a building to which each laborer in the field contributes his quota. "Sometimes the structure has to be altered and amended but it is seldom that a labourer, whose soul is in his work, retires without having added something in the shape of useful materials. It takes a long time—it may be years of study—before a sound brick is baked. . . . It is certain, however, that by this 'brick'-making materials for the structure of the Classification of Birds will be slowly gathered." He has also a word for the critic, who pulls down but never builds up. This is followed by some practical and very sensible remarks upon the exhibition of bird material in museums, and on the general subject of the study of birds. He says: "If the system of teaching by artistic groups be adopted, then only the principal forms would require illustration, and a representation of the leading type of each order or sub-order would suffice. A supplementary gallery might be provided, in which types of each family, subfamily, and genus of birds would be exhibited, but lower than genera I would never descend in a public exhibition. The student of species should find his material in the 'study' series, . . . and there each species should be amply illustrated by actual specimens showing the plumage of both sexes at all times of the year, young birds in all stages, moulting individuals, and a full series exhibiting geographical distribution and variation in the species, even if it requires a series of specimens. The days have gone by when the description of a new species was the be-all and end-all of an ornithologist's hopes. The warfare over priority of nomenclature is fast showing signs of waning. . . . It is time, however, that by some such means as an International Congress of Ornithologists the names of the species of birds were settled once and for all, in order that we may turn our attention to the far more important facts of geographical distribution and life-history of species. We are approaching a time when the study of rainfall and climate, of altitude and locality, and even the conditions of weather under which a specimen was procured, will be considered indis-

pensable for the minute study which is to be our portion in the not very distant future." (Doubtless Dr. Sharpe is not unaware that these important factors have already received much attention in some quarters, having in fact been uppermost in the minds of many American students for the last two decades at least.)

Dr. Sharpe then proceeds to develop and illustrate his own ideas of the classification of birds and their arrangement by means of his "ideal museum," in elaborating which he has frequent recourse to habits, manner of nesting, character of the eggs, mode of roosting, the character of the nestling in respect to clothing, etc., in deciding points of affinity and relationship, as well as to strictly anatomical characters. Each leading group of the non-Passerine birds is in turn reviewed and located; the Passeres, having been recently treated by him in a special paper, are briefly disposed of by the correction of the position of a few genera and families in the light of later discoveries. His views of the relationships of the various subdivisions of the Oscines is, however, diagrammatically expressed in Plate XI.

Then follows in linear sequence a tabular list of the higher groups and their families, with diagnoses in footnotes, illustrated by a diagram showing comparatively the system of the author and those of Fürbringer and Seebohm. He puts forward his scheme as of course a tentative one, in the hope of being able to renew the attack at some future time. It differs at many points from any of its predecessors, whether for the better or for the worse is beyond the scope of the present notice to inquire. The number of orders is 34, and of suborders 78. He concludes this masterly address — in which throughout he skilfully imparts a certain charm to a strictly technical subject — with a few personal reminiscences of interest to the systematic ornithologist. — J. A. A.

Hornaday's Handbook of Taxidermy and Zoölogical Collecting.* — Taxidermy, the handmaid of Zoölogy, has already become one of the fine arts, requiring the skill and other qualities of both the sculptor and the painter, and capable of yielding results comparable with the masterpieces of either. The expert collector, and still more the skilled taxidermist, is the indispensable ally of the professional naturalist and the museum-builder. On the intelligence and alertness of the former and

*Taxidermy | and | Zoological Collecting | A Complete Handbook for the Amateur Taxidermist, | Collector, Osteologist, Museum Builder, | Sportsman and Traveller | By | William T. Hornaday | For eight years Chief Taxidermist of the U. S. National Museum; for seven years | Zoological Collector and Taxidermist for Ward's Natural Science Establish- | ment; late Superintendent of the National Zoological Park; | author of 'Two Years in the Jungle,' etc. | With Chapters on | Collecting and Preserving Insects | By W. J. Holland, Ph.D., D.D. | Chancellor Western University of Pennsylvania; . . . [= 3 lines titles.] | Illustrated by Charles Bradford Hudson | and other Artists | 24 Plates and 85 Text Illustrations | New York | Charles Scribner's Sons | 1891.—8 vo. pp. xix+362.

the skill of the latter depend much of our progress in systematic zoölogy and the very existence of creditable museums of natural history.

Mr. Hornaday's work is evidently, as he says, 'an affair of the heart.' Mr. Hornaday, as a taxidermist, has ever been an enthusiast of high aims, a leader in the field of what may be termed the 'New Taxidermy.' Evidences of his exceptional skill and talent have long graced our leading museums, notably the National Museum at Washington, where for eight years he was in charge of the Department of Taxidermy. In placing before the public, in the form of a 'manual,' the results of his long experience, both in the field and in the work-shop, he has conferred a boon not alone upon collectors and taxidermists, but upon zoölogical science in general. No work, it is safe to say, in any sense comparable with this, has ever been written; and the impulse it must give to intelligent field work and scientific taxidermy is almost beyond estimate. It certainly must fill, as few works ever do, the proverbial 'long-felt want' in this particular field. The book is tersely and vigorously written, and here and there the author displays much cleverness in his way of 'putting things.'

The 'Manual' consists of six Parts as follows: 'Part I, Collecting and Preserving.' This contains eleven chapters, treating of the following subjects: (1) 'The Worker, and the Work to be Done'; (2) 'Outfits, and Hints on Hunting'; (3) 'How to Select and Study Fresh Specimens'; (4) 'Treatment of the Skins of Small Mammals'; (5) 'Collecting and Preserving the Skins of Large Mammals'; (6 and 7) 'Collecting Skins of Birds'; (8) 'Collecting Reptiles'; (9) 'Collecting Fishes'; (10) 'Collecting Marine Invertebrates'; (11) 'Collecting Birds' Eggs and Nests.'

'Part II,' constituting the main body of the work (pp. 99-257), is devoted to 'Taxidermy,' and treats in detail the technique of the subject in all its branches. 'Part III' treats of 'Making Casts' of mammals, fishes and reptiles. 'Part IV' is devoted to 'Osteology,' and gives detailed directions for collecting, macerating, cleaning and mounting.

'Part V' (pp. 305-338), on 'The Collection and Preservation of Insects,' is by Dr. W. J. Holland, the well-known lepidopterist. 'Part VI, General Information,' treats, among other things, of 'Insect Pests, and Poisoning,' with also a chapter on 'The Best Books of Reference.'

The illustrations, numbering 23 plates and 104 cuts in the text, render clear many of the obscurer details of the subject, from skinning mammals and birds and making up the skins, to the preparation of a manakin for a bison or tiger, the 'internal structure' of a mounted bird, or the preservation of nests and eggs.

The amount of detailed information here given — much of it never before consigned to print — is seemingly sufficient to help any bright collector or amateur taxidermist over most of the many difficulties that lie in his path. Not a little practical and healthful advice is given, *passim*, on a variety of pertinent topics, from the "postage-stamp style of collecting by boys who have no real love for natural history" (which is severely condemned), to the important subject of labels, measurements of speci-

mens and field notes. The importance of care and thoroughness in relation to gathering, preserving and labelling is at all times dwelt upon with emphasis. Too truly, as Mr. Hornaday observes, "The lives of hundreds of thousands of wild birds have been sacrificed to no purpose by persons claiming to be ornithological collectors, and yet who had not the knowledge, skill, or industry to make up good bird skins. . . . The ability to make up fine, clean, shapely, well-preserved skins, and make them rapidly also, is a prime requisite in any one who aspires to be sent off to interesting 'foreign parts' to shoot, collect, and see the world—at the expense of some one else." We are glad to see that in the matter of bird skins the best modern methods of 'making up' are described and fully illustrated with cuts; and that proper directions are given for insuring the highest scientific value of all kinds of bird specimens. We wish we could extend this statement to include all the author says about mammals as well, but sad experience leads us to make use of the present opportunity to put in an earnest protest against the "salt-and-alum baths," so unreservedly recommended for the preservation of mammal skins for mounting. "In only two or three instances," says Mr. Hornaday, "have I ever known it to change the color of the hair in the least." Our experience, on the contrary, has been widely different, even when the bath was compounded in accordance with Mr. Hornaday's own recipe. The skins of many small mammals, such as red squirrels, ground squirrels, spermophiles, kangaroo rats and mice, and deer mice, quickly change in color from immersion in it, to such an extent as to be wholly unrecognizable by their coloration, and hence worthless for any scientific purpose, yellowish, rufous, and pale browns becoming dull red. On the other hand, some colors appear to be not in the least affected. But in many foreign mammals it would be impossible to tell whether or not there had been a change of color. Should the change be not detected, as may readily happen, the 'salt-and-alum bath' may yet prove a prolific species maker, as it has already narrowly escaped being in several instances well known to the present writer. Ordinary alcohol, as commonly used, is not always to be trusted where the question of color is at stake, while the so-called 'wood alcohol,' or methyllic spirits, is absolutely ruinous, being worse even than the salt-and-alum bath. Fortunately birds are not often preserved in antiseptic solutions, except for strictly anatomical purposes; besides, their colors are, as a rule, less liable to change from such treatment than those of mammals.

Beyond question, Mr. Hornaday's book marks the beginning of a new era in the history of both natural history field work and taxidermy, and naturalists cannot be too grateful for his admirable manual of 'Taxidermy and Zoölogical Collecting.'—J. A. A.

Butler's Birds of Indiana *—This excellent catalogue of the Birds of

*The Birds of Indiana, with Illustrations of Many of the Species. Prepared for the Indiana Horticultural Society, and Originally Published in its Transactions for 1890. By Amos W. Butler, of Brookville. 8vo, pp. 135.

Indiana gives 305 species as the number thus far actually known to occur in the State, and a 'Hypothetical List' of 79 species, "which have been taken in neighboring States, or whose known range seems to include Indiana." Both lists have evidently been prepared with great care, and are very satisfactorily annotated, the previously published records of the capture of the rarer species within the State being duly cited. The annotations throw much new light on the distribution of many of the species within the State. The introduction gives the origin of the present Catalogue, a brief account of the leading topographical features of the State, a transcript of 'An Act for the Protection of Birds, their Nests and Eggs' (closely modelled after the New York law), passed in March last by the State Legislature, and due acknowledgments for aid in the preparation of the work. This is followed by a 'Bibliography' of Indiana ornithology (pp. 10-14), and a list is also given (pp. 117-119) of persons contributing notes used in the preparation of the Catalogue. The author also states that through the coöperation of Dr. C. Hart Merriam, Chief of the Division of Economic Ornithology and Mammalogy of the United States Department of Agriculture, he was "enabled to examine the migration reports, covering the State of Indiana for a series of years." The illustrations consist of a large number of cuts from Coues's 'Key to North American Birds,' secured through the courtesy of the publishers of that well-known work. A very full index (pp. 121-135) very fittingly closes this admirable and exceedingly welcome exposition of Indiana ornithology.—J. A. A.

Colburn and Morris's 'Birds of the Connecticut Valley in Massachusetts.*'—This briefly annotated list of 212 species forms a convenient résumé of the bird life of the region considered. The list "contains the names of the birds of the Connecticut Valley in Massachusetts, so far as they are known to the authors, either by personal observation or from consulting the works of the ornithologists who have described the birds of New England"; but as these works are not cited in the annotations, it is not always evident whether the statements made rest on the authority of the authors of the present paper or on previously published records. Hence it is sometimes difficult to distinguish whether or not a record or statement is here for the first time recorded. As the authors state that the list was prepared "for their own use, and not for general publication," perhaps we should be lenient in our criticism, yet we can hardly refrain from calling attention to one or two points, in the interest of sound work. We regret to see that some species are admittedly included that may, on "further observation," require "elimination." These are presumably given on the authority of others, and probably on previously published records, but unless so stated in the list the responsibility rests on its authors. Some of the omissions from the list are hard to explain,

*The Birds of the Connecticut Valley in Massachusetts. By Wm. W. Colburn and Robert O. Morris. 16 mo. pp. 24. Springfield, Mass., 1891. (Privately printed.)

except on the ground of haste or carelessness, since they are duly recorded on unquestionable authority in the works referred to by the authors in their preface,—e. g., *Picoides arcticus*, *Otocoris alpestris*, *Empidonax flaviventris*, *Quiscalus quiscula æneus*, *Ammodramus henslowi*, *Melospiza lincolni*, *Dendroica palmarum hypochrysea*, *Seturus motacilla*, *Anthus pensylvanicus*, etc. *Larus argentatus* should of course be *L. argentatus smithsonianus*. The list is attractively gotten up, and is remarkably free from typographical errors; yet it is marred by a blemish one would hardly look for in a scientific publication of the present day, namely, the use of capital initial letters for *all* specific and subspecific names. Evidently the authors allowed their own good judgment to be swayed by the bad counsels of the printer.—J. A. A.

Merriam's List of Birds observed in Idaho.*—The ornithological results of Dr. Merriam's 'Biological Reconnaissance of south-central Idaho' during the season of 1890, consists of an annotated list of 158 species, 94 of them recorded for the first time for the State, and the discovery of a new Owl, allied to *Megascops flammeolus*, and named *M. flammeolus idahoensis*. This new form differs from *M. flammeolus* in being smaller and paler. A well-executed colored plate accompanies the description. Besides the general list there is a special 'List of Birds noted in the Saw Tooth Mountains, at or near Saw Tooth or Alturas Lake, September 25 to October 4, 1890' (pp. 19, 20), numbering 43 species, and various references to birds of particular localities in the general introduction.

As stated by Dr. Merriam, Idaho has thus far remained a veritable *terra incognita*, so far as detailed knowledge of its natural history is concerned, less being known of it than of any other State or Territory in the Union. The present report on the work done there during the season of 1890 occupies about 120 octavo pages (North American Fauna, No. 5), of which about 30 are devoted to an exposition of the physical characters and life zones of the region explored, and about 60 to a detailed report on the mammals obtained, of which 12 of the 67 species here enumerated are described as new. It is needless to say that much light is thrown upon the physical features of the region and their relation to its faunal and floral characteristics. Considering the limited time spent in field work and the small force of assistants employed, a surprisingly large amount of work was accomplished.—J. A. A.

Maynard's 'Contributions to Science.'†—The 'Contributions' contain articles relating to nearly all branches of natural history. Only the fol-

*Annotated List of Birds observed in Idaho during the Summer and Fall of 1890, with Notes on Species previously recorded from the State. By Dr. C. Hart Merriam. North American Fauna, No. 5, July 1890, pp. 89-108.

†Contributions to Science. By Charles J. Maynard. Illustrated with hand-colored plates, drawn on stone by the Author. Vol. I, "April, 1889-Jan. 1890." Newtonville, Mass.: Published by the Author. 8vo. pp. 204, pl. xvi. with numerous cuts in the text. [No. 3, dated "October, 1889," was received March 24, 1890; No. 4, dated "January, 1890," was received April 2, 1891.]

lowing are ornithological: (1) 'Description of an apparently New Species of Warbler from Jamaica' (No. 1, p. 30, pl. iii, fig. 1, head). This is named *Dendroica ignota*, and is said to bear a general resemblance to *D. palmarum*. It is based on a single specimen in the Museum of the Institute of Jamaica, at Kingston, Jamaica, where the type remains, "labelled 'Hamstead, St. Andrews, April 4th, '79. J. Goodlet.'"

(2) 'The Sterno-trachealis as a Vocal Muscle' (*ibid.*, pp. 35-37, pl. iii, fig. 2-14). This muscle is claimed to be a true vocal muscle, and hence Mr. Maynard assigns six pairs of vocal muscles to the Oscines.

(3) 'Notes on Some Jamaican Birds' (*ibid.*, pp. 39, 40). Notes on five species. *Rallus coryi* is recorded from Jamaica, and *Helinaia swainsonii* is judged to be "a quite common winter bird in Jamaica," from the number of skins in the Museum of the Institute of Jamaica.

(4) 'Description of a supposed New Species of Gannet' (*ibid.*, pp. 40-48, and No. 2, pp. 51-57, pl. v, fig. 1 and 2, heads of adult and young). This, named *Sula coryi*, is the *Sula cyanops* of Cory from Cayman Brac and Little Cayman (*cf.* Auk, VI, 1889, pp. 31, 32). A detailed description is given of the various phases of plumage, from the nestling to the adult; also a very full account of the habits of the species. At least 10,000 of these Gannets were estimated to be breeding "in the gannetry at Little Cayman." It has the form and size of the Red-faced Gannet (*Sula piscator*), but differs from it in having the tail wholly white.

(5) 'The Vocal Organs of the American Bittern, *Botaurus lentiginosus*' (No. 2, pp. 59-68, pl. vi, and 6 figs. in text). This is an attempt to explain, on anatomical grounds, the production of the singular pumping sounds this species emits. By a singular coincidence, Mr. Maynard's studies appear to have been based on the very individual which formed the basis of Mr. Bradford Torrey's paper on this species in 'The Auk' (VI, 1889, pp. 1-8); they tend to confirm Mr. Torrey's hypothesis there given.

(6) 'Notes on the Anatomical Structure of the Crowned Crane' (*ibid.*, pp. 80-82).

(7) 'On the probable Evolution of the Totipalmate Birds, Pelicans, Gannets, etc.' (*ibid.*, pp. 82-88). This is a paper of considerable interest, but not easy to summarize. The Pelicans are considered to be the central and oldest type, the Tropic Birds and the Frigate Birds the most specialized. The American Gannets are believed to be recent offshoots from two stocks, represented by *Sula sula* and *S. cyanops*.

(8) 'The Sound-producing Organs of Birds' (No. 3, pp. 101-106, figs. 16-19, and No. 4, pp. 164-167, figs. 40, 41). The species particularly considered are the Bohemian Waxwing, the American Woodcock, the Evening Grosbeak, the American Barn Owl, the Ani, and the American Flamingo.

(9) 'Notes on the Anatomical Structure of three Species of Gannets' (*ibid.*, pp. 116-123, figs. 21-27, and No. 4, pp. 151-153, figs. 36-39). These are *Sula sula*, *S. coryi*, and *S. bassana*.

(10) 'Singular Cause of the Death of a White-bellied Nuthatch' (*ibid.*, p. 124, fig. 28). An acorn shell transfixd by the bird's bill could not be dislodged, and caused the death of the bird through its worry and struggle to dislodge the obstruction.

(11) 'Diseased Feet of a Chipping Sparrow' (*ibid.*, p. 125, fig. 29). Both feet affected by a "cancerous growth."

(12) The Arrow-headed Warbler of Jamaica, *Dendroica pharettra* (*ibid.*, p. 136, pl. ix). Figured, with a short note on its history.

(13) 'The Nictitating Membrane and Crystalline Lens in the Mottled Owl' (*ibid.*, pp. 136, 137, figs. 34, 35).

(14) 'Notes on the Young of Certain Species of Birds' (*ibid.*, pp. 140-147, and No. 4, pp. 159-163, pls. xi-xiv, and 7 figs. in the text). The young of the following species are figured: Man-of-War Bird, young 2 days old, pl. xiv; Belted Kingfisher, newly hatched, fig. 36; Cory's Gannet, pl. xi, young, 2 days old; Common Gannet, pl. xii, 2 days old; Audubon's Shearwater, fig. 36*, 1 day old; Least Tern, fig. 36**, 1 day old; Bob-white and Ruffed Grouse, about 7 days old, pl. xiii; Rough-winged Swallow, few days old, fig. 38; Worm-eating Warbler, about one week old, fig. 39; Florida Mottled Owl, one week old, fig. 40. There is much interesting comment on the various species figured.

(15) 'Notes on West Indian Birds' (No. 4, pp. 171-181). This paper contains a long account of the habits of the Bahama Wood Star (*Doricha evelyna*), and shorter accounts of the Lyre-tailed Hummingbird (*D. lyrura*), Ricord's Hummingbird (*Sporadinus ricordi*), the Plumbeous Thrush (*Mimocichla plumbea*), and the Red-legged Thrush (*M. rubripes*).

(16) 'Notes on the Southward Migration of the White-bellied Swallow, *Hirundo bicolor*' (*ibid.*, pp. 186, 187). Its gradual retreat southward from Woods Holl, Mass., to Florida, with the advancing cold weather of autumn, is noted.

These papers contain much original and interesting matter, as indicated by the above-given titles and comment.—J. A. A.

Minor Ornithological Publications.—Since last noted in these pages 'The American Field' (Vols. XXIX-XXXIV, 1888-1890) has contained the following articles and notes of interest to ornithologists (Nos. 2015-2112).

The American Field.

2015. *Game Destroying Hawks.* By W. C. A[very]. 'The American Field,' Vol. XXIX, Jan. 7, 1888, p. 7.

2016. *English Sparrow Catching.* By W. T. Hill. *Ibid.*, Jan. 14, 1888.

2017. *The Grouse Family.* By Crocus, W. A. DeForest, and Ranger. *Ibid.*, Jan. 21, 1888, p. 55. — Drumming of *Bonasa umbellus*.

2018. *The Woodcock.* By Killbuck. *Ibid.*, Jan. 28, 1888, pp. 79-80.

2019. *Snipes Wintering in the North.* By Clarence A. Farnum. *Ibid.*, Feb. 4, 1888, p. 104. — *Gallinago delicata*.

[American Field.—Continued.]

2020. *The Ruffed Grouse*. By Roxey Newton. *Ibid.*, Feb. 11, 1888, p. 126.
2021. *The Woodcock*. By A. Guthrie. *Ibid.*, Feb. 18, 1888, p. 150.
2022. *The Drumming of the Ruffed Grouse*. By Long Lake. *Ibid.*, Feb. 25, 1888, p. 175.
2023. *Snipes Wintering in the North*. By 'Bluebill.' *Ibid.* — *Galinago delicata*.
2024. [*Tame Ruffed Grouse*.] By Arthur E. Douglas. *Ibid.*
2025. *Drumming of the Ruffed Grouse*. By F. G. Sargent, E. Orcutt, and Picus. *Ibid.*, March 10, 1888, pp. 222, 223.
2026. *Drumming of the Ruffed Grouse*. By H. E. Jones. *Ibid.*, March 17, 1888, pp. 246, 247. — Also contains a note on *Melcagris gallopavo*.
2027. *Drumming of the Ruffed Grouse*. By Old Bart and Algonquin. *Ibid.*, March 24, 1888, p. 271.
2028. *The Drumming of the Ruffed Grouse*. By E. Tulley and A. A. Case. *Ibid.*, March 31, 1888, p. 295.
2029. *Propagation of Quails*. By C. W. Marsh. *Ibid.*, April 21, 1888, p. 366. — *Colinus virginianus*.
2030. *Drumming of the Ruffed Grouse*. By L. P. Wilmot, Old Foggy, and N. P. Leach. *Ibid.*
2031. *The English Sparrow*. By Seth Green and Birdo. *Ibid.*, April 28, p. 390.
2032. *Drumming of the Ruffed Grouse*. By Jackals, C. A. R., and Mahaiwe. *Ibid.*, May 5, 1888, p. 414.
2033. *The English Sparrow*. By Phil. and G. H. E. *Ibid.*
2034. *The English Sparrow*. By E. H. Lathrop, C. A. R., and N. *Ibid.*, May 12, 1888, p. 438.
2035. *The Propagation of Quails*. By A. W. Burnham. *Ibid.* — *Colinus virginianus*.
2036. *The English Sparrow*. By Marlin. *Ibid.*, May 19, 1888, p. 462.
2037. *Ruffed Grouse in Confinement*. By Occasional. *Ibid.*
2038. *The Great Auk*. By W. A. Stearns. *Ibid.*, May 26, 1888, p. 487.
2039. *The English Sparrow*. By G. H. E., J. W. E. Clarke, and H. Malcolm. *Ibid.*, June 2, 1888, p. 511.
2040. *Drumming of the Ruffed Grouse*. By Willie F. Pierson, A. A. Case, and F. A. S. *Ibid.*
2041. *Wandering Albatross in Puget Sound*. By Silalicum. *Ibid.* — See also No. 2044.
2042. *The English Sparrow*. By Old Dominion, Elliott Coues, and Picus. *Ibid.*, June 9, 1888, p. 534.
2043. *Freaks of Birds and Animals*. By W. H. W. *Ibid.* — *Tympanuchus americanus* and *Bonasa umbellus*.
2044. *Albatrosses on Puget Sound*. By Elliott Coues. *Ibid.* — Suggesting that the birds mentioned in No. 2041 may be *Diomedea exulans*.
2045. *The English Sparrow*. By Jno. H. Ward and William Poor Paresinger. *Ibid.*, June 16, 1888, p. 558.

[American Field.—Continued.]

2046. *The English Sparrow*. By G. H. E., G. R. W., and Wacoutah. *Ibid.*, June 30, 1888, p. 606, 607.
2047. *The English Sparrow*. By Lothar Harms and Geo. Greene. *Ibid.*, Vol. XXX, July 7, 1888, p. 6.
2048. *The Skylark*. By Geo. Greene. *Ibid.*—Habits of *Otocoris a. praticola*.
2049. *The English Sparrow*. By G. H. E. Church, Algonquin, and G. W. B. *Ibid.*, July 14, 1888, pp. 30, 31.
2050. *The English Sparrow*. By Lynx and Algonquin. *Ibid.*, July 14, 1888, p. 79.
2051. *The English Sparrow*. By Congaree. *Ibid.*, Aug. 4, 1888, p. 102.
2052. *The Chinese Pheasant*. By W. O. Blaisdell. *Ibid.*, Aug. 11, 1888, p. 128.
2053. [*The English Sparrow*.] By C. W. C. *Ibid.*
2054. *The Woodcock*. By Hay. *Ibid.*, Aug. 18, 1888, pp. 149, 150.
2055. [*Habits of Gallinago delicata*.] By S. R. N. *Ibid.*, Aug. 25, 1888, p. 175.
2056. *The Pelican*. By Sol Ace. *Ibid.*, Sept. 15, 1888, p. 246.
2057. *Birds of Prey in Illinois*. By Geo. Greene. *Ibid.*, Sept. 22, 1888, p. 269.
2058. [*Blue-winged Teal Eggs in September*.] By Fred F. Merrill, *Ibid.*, Oct. 6, 1888, p. 319.
2059. *The American Woodcock*. By Monoquet. *Ibid.*, Dec. 8, 1888, p. 457.
2060. [*Whistling of the Woodcock*.] By Washington A. Coster. *Ibid.*, Dec. 29, 1888, pp. 619, 620.—See also Vol. XXXI, Jan. 12, 1889, p. 30; Jan. 19, p. 54; Jan. 26, p. 79; Feb. 9, p. 128; and March 9, p. 223.
2061. [*Colinus virginianus in a Hole in the Ground*.] By J. C. S. *Ibid.*, Vol. XXXI, Jan. 12, 1889, p. 30.—See also Jan. 19, p. 54; Jan. 26, p. 79; Feb. 9, p. 127; Feb. 23, p. 176; and March 9, p. 222.
2062. [*Colinus virginianus in Confinement*.] By Henry N. Howell *Ibid.*, Feb. 16, 1889, pp. 150, 151.
2063. [*Trochilus colubris on the Ground*.] *Ibid.*, March 9, 1889, p. 223.
2064. *The Woodcock as a Vocalist*. By James Hennessey. *Ibid.*, March 16, 1889, p. 247.
2065. [*Notes on Callipepla squamata* (?).] By J. W. P. *Ibid.*
2066. [*The Woodcock's Whistle*.] By Woodcock. *Ibid.*, March 30, 1889, p. 296.
2067. *Habits of the Quail*. By Muzzleloader., *Ibid.*, April 27, 1889, p. 399.—*Colinus v. texanus*.
2068. *A Loon in Town*. By M. Chill. *Ibid.*, May 25, 1889, pp. 498, 499.—*Urinator imber*.
2069. *Habits of Quails*. By Ram Rod. *Ibid.*, June 1, 1889, p. 523.—*Colinus virginianus*.

[American Field.—Continued.]

2070. [*Diving of the Mallard and other Ducks.*] By Algonquin. *Ibid.*, Vol., XXXII, July 6, 1889, p. 6.

2071. [*Note on the Wood Duck.*] By W. C. A[very]. *Ibid.*, Aug. 3, 1889, p. 104.

2072. *Days with the Upland Game Birds of America. The Snipe.* By F. Henry Yorke, M.D. *Ibid.*, Aug. 10, 1889, pp. 121-123; Aug. 17, pp. 145, 146; Aug. 24, pp. 169, 170; Aug. 31, pp. 194-196.—Chiefly about *Gallinago delicata*. The first of a series of sketches upon the habits of various game birds, in which considerable information is given under the guise of a narrative.

2073. *A Rara Avis.* By E. M. B. *Ibid.*, Aug. 24, 1889, p. 176.—*Ortalis vetula maccalli*.

2074. *A Male Bob-white Hatching a Set of Eggs.* By M. E. Allison. *Ibid.*

2075. [*Zenaidura macroura Nesting on the Ground.*] By Prof. J. C. Schuyler. *Ibid.*

2076. *Chondestes grammacus.* By W. C. A[very]. *Ibid.*, Aug. 31, 1889, p. 200.—At Greensboro, Ala.

2077. *Days with the Upland Game Birds of America. Plover.* By F. Henry Yorke, M.D. *Ibid.*, Sept. 7, 1889, pp. 217, 218; Sept. 14, pp. 241-243.

2078. [*A Male Bob-white Incubating.*] By W. C. A[very]. *Ibid.*, Sept. 7, 1889, p. 223.

2079. *Habits of the Woodcock.* By E. S. Gordon. *Ibid.*, Sept. 14, 1889, p. 248.

2080. *Days with the Upland Game Birds of America. Woodcock.* By F. Henry Yorke, M.D. *Ibid.*, Sept. 21, 1889, pp. 265, 266; Sept. 28, 1889, pp. 291-293; Oct. 5, 1889, pp. 313, 314; Oct. 12, 1889, pp. 337, 338; Oct. 19, 1889, pp. 361-362.

2081. [*The Position of the Woodcock's Eyes.*] By S. W. G. *Ibid.*, Sept. 21, 1889, p. 271.

2082. [*Migrations of Colinus virginianus.*] Editorial. *Ibid.*, Sept. 28, 1889, p. 295.

2083. *Days with the Upland Game Birds of America. Pinnated Grouse.* By Dr. F. Henry Yorke. *Ibid.*, Oct. 26, 1889, pp. 385, 386; Nov. 2, pp. 409, 410; Nov. 9, pp. 433, 434; Nov. 16, pp. 457, 458; Nov. 23, pp. 481, 482.

2084. *Wild Pigeons in New York.* By Geo. W. La Rue. *Ibid.*, Oct. 26, 1889, pp. 387, 388.

2085. [*The Flight of Gallinago delicata.*] By T. [=F.] Henry Yorke. *Ibid.*, p. 391.

2086. *Days with the Upland Game Birds of America. Ruffed Grouse.* By Dr. F. Henry Yorke, *Ibid.*, Nov. 30, 1889, pp. 505, 506; Dec. 7, pp. 529, 530.

2087. *The Flight of the Snipe and Woodcock.* By F. Henry Yorke, M.D. *Ibid.*, Dec. 7, 1889, p. 534.

[American Field.—Continued.]

2088. *Days with the Upland Game Birds of America. Quail.* By Dr. F. Henry Yorke. *Ibid.*, Dec. 14, 1889, pp. 553, 554; Dec. 21, pp. 577, 578; Vol. XXXIII, Jan. 4, 1890, pp. 1, 2; Jan. 11, pp. 25, 26; Jan. 18, pp. 49, 50.
2089. *Vibratory Sounds produced by Birds.* By Geo. G. Cantwell. *Ibid.*, Dec. 14, 1889, p. 558.
2090. *Habits of Quails.* By Santee. *Ibid.*, Vol. XXXIII, Jan. 4, 1890, p. 2.
2091. *Habits of Quails.* By Emory P. Robinson. *Ibid.*, Jan. 11, 1890, p. 31.
2092. *Wild Pigeons.* By Geo. G. Cantwell, *Ibid.*—Their scarcity.
2093. *Days with the Upland Game Birds of America. Turkey.* By Dr. F. Henry Yorke. *Ibid.*, Jan. 25, 1890, pp. 73, 74; Feb. 1, pp. 97, 98.
2094. *Wild Pigeons and Mud Puppies.* By Morris Gibbs. *Ibid.*, p. 102.
2095. *Habits of Game Birds.* By Dr. F. Henry Yorke. *Ibid.*, Feb. 8, pp. 126, 127.—*Aix sponsa*, *Tympanuchus americanus*, *Philohela minor*, *Colinus virginianus*.
2096. [*Quail withholding Scent.*] By Dupont. *Ibid.*, Feb. 15, 1890, p. 151.
2097. *Habits of the Snipe.* By Siskiyou. *Ibid.*, March 1, 1890, p. 199.
2098. *Bird Life in Labrador.* By Winfred A. Stearns. *Ibid.*, April 26, 1890, p. 390; May 3, pp. 415, 416; May 10, pp. 438, 439; May 17, p. 462; May 24, pp. 486, 487; May 31, p. 511; June 7, p. 535; June 14, pp. 559, 560; June 21, pp. 583, 584; June 28, pp. 611, 612; Vol. XXXIV, July 5, pp. 6, 7; July 12, p. 31; July 19, p. 55; July 26, p. 79; Aug. 2, p. 104; Aug. 9, pp. 128, 129; Aug. 16, p. 153; Aug. 23, p. 176; Aug. 30, p. 199; Sept. 6, pp. 223, 224; Sept. 13, p. 247; Sept. 20, p. 271; Sept. 27, p. 295; Oct. 4, p. 319; Oct. 11, pp. 344, 345.
2099. [*Evening Grosbeak at Reading, Mass.*] By R. F. Loring. *Ibid.*, April 26, 1890, p. 391.
2100. [*Flight of the Snipe.*] By Horace Radish. *Ibid.*, May 10, 1890, p. 439.
2101. [*Notes on the Evening Grosbeak in Oregon.*] By Thos. G. Farrell. *Ibid.*, June 14, 1890, p. 560.
2102. *The Woodcock.* By W. C. A[very]. *Ibid.*, June 21, 1890, p. 584.—In Alabama.
2103. [*Robins and English Sparrows.*] By Chapman Chilcott. *Ibid.*, Vol. XXXIV, July, 12, 1890, p. 31.
2104. *Nesting of the Wood Duck.* By Will de la Barre. *Ibid.*, pp. 31, 32.
2105. *The Whisky Jack.* By Agamak. *Ibid.*, July 19, 1890, p. 55.—Habits of *Perisoreus canadensis*.
2106. [*Ravens and Turkey Buzzards.*] By E. H. Walker. *Ibid.*, Oct. 4, 1890, p. 320.
2107. *About Swans.* By W. A. S[tearns]. *Ibid.*, Oct. 25, 1890, pp. 391, 392.

[American Field.—Continued.]

2108. [*Passer domesticus* in Providence, R. I.] Editorial. *Ibid.*, Nov. 23, 1890, p. 512.

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GENERAL NOTES.

The Yellow-legs (*Totanus flavipes*) Breeding in Ontario County, N. Y.—A pair of Yellow-legs (*Totanus flavipes*) remained this season and bred in a wet pasture in company with Killdeer (*Ægialitis vocifera*) and Spotted Sandpipers (*Actitis macularia*). I do not know of any former record of their breeding in the County. The owner of the pasture, who is somewhat of a sportsman, and who first called my attention to the birds, would not permit their being disturbed, as he was anxious that they should make it a regular breeding ground. I repeatedly saw the birds at close quarters and fully identified them. During the latter part of June I noticed four young accompanying the parents who permitted of much closer approach than formerly. The young were about half grown and I endeavored to catch one of them but they eluded pursuit and finally escaped into a swamp close at hand.—B. S. BOWDISH, *Phelps, N. Y.*

The Turkey Vulture (*Cathartes aura*) in Ontario County, N. Y.—July 3 Charles Donelly, a young sportsman of this place, shot a Turkey Vulture (*Cathartes aura*) which was one of a flock of eight, seen in the vicinity of a marshy wood. On the 5th the bird was presented to me, and although in poor condition—being badly shot—was preserved as a good specimen. The bird is a female. The flock remained in the vicinity the entire afternoon, but the next morning were gone, and none have been seen since. This is, so far as I know, the first record of the bird being taken in the County.—B. S. BOWDISH, *Phelps, N. Y.*

An Abnormal Specimen of *Coccyzus maynardi*.—A peculiar example of what is probably *Coccyzus maynardi* has been lately received from Inagua, Bahamas. The bird has the general appearance and marking of *C. maynardi*, but the head, neck, and underparts are plumbeous gray, and the back and upper tail-coverts ash-gray. The quills are pale brown and the tail-feathers black, which, with the exception of the two central feathers are tipped with white. The bird, a female, was taken near Northwest Point, Inagua, May 28, 1891.—CHARLES B. CORY, *Boston, Mass.*

Further Note on *Otocoris alpestris praticola*.—In the April number of 'The Auk' mention was made of this bird's breeding in Butler County, Pennsylvania. I now desire to record its occurrence in the nesting season in Beaver County also, I having observed two individuals near the town of Beaver in June, on the 18th and 25th of the month respectively. In this connection it may be interesting to note that Dr. B. H. Warren has recently, as he informs me, taken the young in the mountainous region of Lycoming County.—W. E. CLYDE TODD, *Beaver, Beaver Co., Pa.*

The English Sparrow (*Passer domesticus*) in Nassau, N. P.—Several examples of this species were obtained by my collectors in Nassau during the past winter. Although introduced many years ago, it is not abundant and does not seem to have extended its range to any of the neighboring islands.—CHARLES B. CORY, *Boston, Mass.*

Former Occurrence of *Spiza americana* in Northern New Jersey.—Mr. C. S. Galbraith informs me that forty years ago the Dickcissel was a common summer resident near his home at Hoboken, N. J., a fact which seems of sufficient importance to be placed on record.—FRANK M. CHAPMAN, *American Museum of Natural History, New York City.*

An Abnormal Specimen of the Nonpareil (*Passerina ciris*).—I shot an adult male Nonpareil on June 24, of this year, which has the entire throat bright yellow. The ring around the eyes is also yellow, instead of red. The rest of the plumage is normal. The bird was shot at Mount Pleasant, S. C. This is the first specimen I have ever seen marked in that manner.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

The Cedar Waxwing and American Dipper in Costa Rica.—April 11, 1891, Dr. Don Anastasio Alfaro secured two fine specimens, male and female, of *Ampelis cedrorum*, taken at the Volcano of Irazú at an elevation of about 6000 feet. I have compared the specimens carefully with examples from eastern North America and can detect no difference. The female has the wax tips to the secondaries. This capture extends the known range of the species several hundred miles southward.

I am also able to extend the known habitat of the American Dipper (*Cinclus mexicanus*) south from Guatamala to Costa Rica. There has been an example in the Museo Nacional for a long time, labeled *C. ardesiacus*, but only a few days ago, when compared with a couple of specimens of true *C. ardesiacus* was the mistake noted. I can also now add that *C. mexicanus* is a comparatively common bird along many of the mountain streams in Costa Rica. Its congener, *C. ardesiacus*, I consider rare.—GEORGE K. CHERRIE, *Museo Nacional, San José, Costa Rica.*

Another Massachusetts Record for the Mockingbird.—A specimen of *Mimus polyglottos* (Linn.) was shot by the writer at Great Island, near Hyannis, Mass., on August 30, 1891. The bird is in young plumage, still showing the spotted breast.—CHARLES B. CORY, *Boston, Mass.*

Geothlypis philadelphia Breeding in Western New York:—In my list of 'Birds of Niagara County, N. Y.', published in 'Forest and Stream,' Sept., 1889, I intimated that the Mourning Warbler bred in Niagara County. On June 13 last my suspicions were confirmed by finding a nest and eggs of this species. I was passing through a heavily timbered wet wood, and about ten rods from the western border I came to a small opening, three to four rods square, when, in about the centre of this opening, a bird flew from under my feet into the adjoining thicket. Glancing toward my feet I saw its nest and eggs, and on adjusting my field glass I saw that the bird was a female *G. philadelphia* and immediately shot it. The nest was placed in the centre of a clump of cowslips. The nest is composed of coarse grass and leaves on the outside, with fine grass inside and lined with hair. Measurement outside, 3 in. deep, 3.50 in. across; inside, 1.75 in. deep and 1.75 across. Eggs white, with a wreath of reddish brown and lilac on the large end, and finely blotched with brown over the whole surface. Measurements, .76 × .51, .77 × .50, and .78 × .50. I have the nest and eggs, and the bird mounted, which, with a fine adult male specimen received May 23, I consider a valuable addition to my collection. These specimens were taken in the same woods where I found *Dendroica cerulea* breeding in 1888.—J. L. DAVISON, *Lockport, Niagara Co., N. Y.*

Breeding of the Mourning Warbler in Ontario County, N. Y.—On June 26, 1891, I was passing through a damp, low thicket when an outcry from a small bird drew my attention to it, it proving to be a female Mourning Warbler (*Geothlypis philadelphia*). Her cries soon brought the male with a beak full of small green worms, evidently collected for the young, but on seeing me he quickly devoured them that he might better join in the remonstrance against my presence. After a short search I found two young birds, nearly grown and fully feathered, but unable to fly. I caught one and held it for some time, thus bringing the parents within a foot of my hand and permitting of the fullest identification. I could have shot them but forbore to do so hoping that they might breed there the coming season. This is the first time I have known this species to breed in this vicinity.—B. S. BOWDISH, *Phelps, N. Y.*

Yellow Palm Warbler (*Dendroica palmarum hypochrysea*).—On May 7, 1891, I shot a male specimen of this Warbler, the first one I have come across here in ten years' collecting.—ERNEST D. WINTLE, *Montreal, Canada.*

Bird Notes from Clatop County, Oregon.—*Hesperocichla nævia*. OREGON ROBIN, VARIED ROBIN.—Common about Astoria and the low lands in winter, breeding back in the heavy timber on the hills. I found a nest of this species nearly completed April 27. The nest was in a small hem-

lock, about four feet up. The locality was on high land, and heavily timbered.

Merula migratoria propinqua. WESTERN ROBIN.—Common. Resident in the bottom lands and valleys. Summer resident in the hills.

Cinclus mexicanus. AMERICAN DIPPER. — This bird, of peculiar habits and flight, as well as song, was observed quite often in the winter and spring along the creeks in the hills. I am confident it breeds there, but I seldom saw it through the summer.

Regulus satrapa olivaceus.—Common resident.

Parus rufescens.—Common resident in the hills.

Troglodytes hiemalis pacificus.—Very common resident, and a profuse singer. I found many nests of this species, and saw young birds, but failed to find a nest containing eggs. For a building site, they seem to have a special liking for the under side of an old log that lies up from the ground.

Cyanocitta stelleri.—Steller's Jay is a common resident. I found a nest May 13 with eggs nearly ready to hatch.

Perisoreus obscurus. OREGON JAY. MEATHAWK.—A common resident. They show little fear about camp in winter, if there is any meat they can get at. I found a nest May 8, with four eggs. It was about ten feet from the ground in a small hemlock in thick woods, and was made of dead twigs, lined with moss and feathers.—C. W. SWALLOW, *Corvallis, Oregon*.

Notes on the Mniotiltidæ of Western Pennsylvania.—*Helmitherus vermivorus*. WORM-EATING WARBLER.—First detected in Beaver County on August 16, 1888, when two specimens were secured out of three seen, probably all belonging to the same family. I found it tolerably common in Butler and Armstrong Counties during my stay there in May and June, 1889, but did not succeed in taking any nests. In 1890, however, on May 28, I found the nest of a pair in a patch of woods about five miles west of the town of Beaver. This spring I have found the species in small numbers in a particularly luxuriant piece of woodland just across the Ohio River from Beaver, where I have no doubt it breeds also. Its note at this season is a trill almost exactly the same as that given by the Chipping Sparrow on its first arrival.

Helminthophila pinus. BLUE-WINGED YELLOW WARBLER. — This species is unaccountably rare in this section, the only specimen which has ever come under my notice being one taken May 2, 1891. I regard it as our rarest Warbler, and of course from my own observations cannot say as to its being a summer resident, though Dr. B. H. Warren mentions having seen it in this County in summer (*Birds of Pennsylvania*, p. 276).

Helminthophila chrysoptera. GOLDEN-WINGED WARBLER. — A rather common migrant, and occurs also as a summer resident in Beaver, Butler, and Armstrong Counties, being somewhat more abundant in the latter. Repeated efforts have been made to discover the nest, but so far without success, though I have seen the old and young together in July.

Helminthophila peregrina. TENNESSEE WARBLER.—Occurs regularly in the fall, and occasionally in the spring, having been quite common this last season from May 9 to May 19.

Compsothlypis americana. PARULA WARBLER.—In Butler and Armstrong Counties I found this species to be a common breeder. I did not actually find a nest, but saw a female in the act of gathering nesting material. In Beaver County I have found it a tolerably common spring migrant, and have lately (June 2, 1891) taken a specimen which was doubtless nesting at the time.

Dendroica tigrina. CAPE MAY WARBLER.—Transient visitant; rare; three specimens have come under my observation, bearing dates respectively of Sept. 14, 1889, Sept. 24, 1889, and May 13, 1891.

Dendroica cærulescens. BLACK-THROATED BLUE WARBLER.—Has been taken as early in the fall as August 28 (1889).

Dendroica maculosa. BLACK-AND-YELLOW WARBLER.—Reference to the nesting of this species has already been made in a former number of 'The Auk' (Vol. VIII, No. 1, p. 116).

Dendroica cærulea. CERULEAN WARBLER.—For an account of the Cerulean Warbler see 'The Auk' Vol. VIII, No. 2, p. 238.

Dendroica pensylvanica. CHESTNUT-SIDED WARBLER.—An abundant migrant in Beaver County, spring and fall. I have taken and seen immature birds in August (August 18, 1888, and August 24, 1889), which would seem to indicate that it breeds a little farther north. In Butler and Armstrong Counties, however, the case is very different; there, every patch of hazel thicket has its pair of Chestnut-sided Warblers, or, if extensive, its several pairs, the gay and sprightly male ever prominent on its outskirts or on some shrub in its midst, constantly uttering his short but sweetly modulated song. Notwithstanding this clue, their nests are difficult to find; after many vain searches I at last succeeded in finding one (June 3, 1889) containing four highly incubated eggs.

Dendroica castanea. BAY-BREASTED WARBLER.—Rare migrant, especially so in the spring.

Dendroica blackburniæ. BLACKBURNIAN WARBLER.—Common migrant in Beaver County. In Butler County I saw a single male June 4, 1889; this indicates that they breed there.

Dendroica virens. BLACK-THROATED GREEN WARBLER.—A common migrant in Beaver County; in Armstrong and Butler Counties a common summer resident, nesting in hemlock and pine forests, where the peculiar notes of the male are constantly heard.

Dendroica discolor. PRAIRIE WARBLER.—Transient visitant; rare; two individuals noted in the fall of 1890.

Geothlypis formosa. KENTUCKY WARBLER.—A rare summer resident; three seen August 5, 1888; a pair seen at same place June 24, 1889. Also one seen in fall migration September 13, 1888.

Geothlypis philadelphia. MOURNING WARBLER.—See note in 'The Auk' Vol. VIII, No. 2, p. 240.

Icteria virens. YELLOW-BREASTED CHAT.—Common summer resident in Beaver County; not noticed in Butler and Armstrong Counties.

Sylvania mitrata. HOODED WARBLER.—This species I have found to be a rare transient visitant (though probably it breeds), having noted individuals September 13 and 25, 1890, and May 2, 1891.

Sylvania canadensis. CANADIAN WARBLER.—Found in Beaver County as a migrant only, but occurs in Butler and Armstrong Counties as a summer resident, nesting in thickets, especially those along the banks of streams.

Setophaga ruticilla. AMERICAN REDSTART. — Abundant summer resident in Beaver County; in Butler and Armstrong Counties conspicuous for its apparent entire absence.

Unless otherwise specified, the quotations given above refer to Beaver County only. Many of them are interesting as showing the peculiar faunal position of not only the western part of Pennsylvania as a whole, but also of its different sections. The notes for Butler and Armstrong Counties show a breeding range for some species extending much further south than has been heretofore generally ascribed in a non-mountainous region. Leasuresville, Butler County, near which my observations were made, is almost exactly in the same latitude as Beaver, Beaver County, and is, moreover, as shown by the Geological Survey report, only slightly over one hundred feet higher. The character of the country is, however, very different, and this has evidently much to do with the difference in the respective avifaunas of the two sections. What makes the problem more difficult of solution is the fact that in both localities relatively northern and relatively southern species (not all Warblers) are both found, as for instance in Butler and Armstrong Counties, *Dendroica maculosa*, *D. pennsylvanica*, *D. virens*, *Sylvania canadensis*, etc., occur, together with such relatively southern forms as *Helminthophila vermivorus*, *Helminthophila chrysoptera* (also *Empidonax acadicus*). A comparison of the whole avifauna of each locality, however, shows that Beaver County is, on the whole, the more southern (relatively) of the two.—W. E. CLYDE TODD, Beaver, Beaver Co., Pa.

Note regarding the Islands of Maraguana and Samana, Bahamas.—While in the Bahama Islands last winter I had several conversations with people who were well acquainted with the islands of Samana and Maraguana. These islands have not been visited by any naturalist, or if so nothing has been published regarding them. I was told that a Parrot occurred on Maraguana and Acklin Islands, and a Crow was sometimes seen on the former island. A peculiar large rat is claimed to occur on Maraguana in abundance. At Samana a Woodpecker occurs, which, if not *Sphyrapicus varius*, would probably prove of much interest. None of my collectors have ever visited these islands, although having positive orders to do so, they having been always prevented by illness or bad weather. I am informed that a regular monthly steamer is to be run after July, 1891, between New Providence and Inagua, touching at a number of the intermediate islands. With such easy communication there should be but little difficulty in obtaining collections from most of the islands.

—CHARLES B. CORY, Boston, Mass.

NOTES AND NEWS.

THE PLATE accompanying the present number of 'The Auk' illustrates two species of Screech Owl from Mexico, described by Mr. William Brewster in 'The Auk' for January, 1888 (Vol. V, pp. 87, 88), and now for the first time figured. Both species are based on specimens collected by Mr. R. R. McLeod in the Province of Chihuahua.

DR. JOHN I. NORTHPROP, an Associate Member of the A. O. U., and a Fellow in Geology at the School of Mines, Columbia College, died June 26, 1891, at the age of twenty-nine years. His tragic ending was peculiarly sad, his death resulting from burns caused by an explosion of alcohol in the cellar of the School of Mines on the day preceding his death. Dr. Northrop was born in New York City, Oct. 12, 1861. He received his early education at the Columbia Grammar School, whence he entered the Columbia College School of Mines in 1880, graduating in 1884 with the degree of a Mining Engineer, and in 1887, after a further course of study, received the degree of Doctor of Philosophy. He then, as Fellow in Geology at the School of Mines, became Assistant to Prof. J. S. Newberry. His special line of study, however, was in the line of Zoölogy, and he had recently received leave of absence from his college duties to pursue a special course of study abroad with a view to promotion to a higher position, which had already been offered him.

About a year preceding his death he married Miss Rich of the Normal School of New York City, and their wedding trip was a visit to the Bahamas to collect and study the fauna and flora of these islands. Both also attended the A. O. U. meeting held last year in Washington, Dr. Northrop's paper on the birds of Andros Island, read before the Union and afterwards published in 'The Auk' (Vol. VIII, pp. 64-80, with a colored plate of *Icterus northropi*), being one of the incidental results of the trip. He also read, in October, 1890, a paper before the New York Academy of Sciences on the Geology of Andros Island (Trans. N. Y. Acad. Sci., X, pp. 4-23), and had in manuscript at the time of his death several extended papers on the invertebrates of the Bahamas, to which he gave special attention. Dr. Northrop gave promise of eminence in his chosen field, and his bright prospects render his untimely death exceptionally sad, and a severe shock to his many scientific and other friends to whom he had personally endeared himself.

AUGUST VON PELZELN, an Honorary Member of the A. O. U., died at Vienna, Sept. 2, 1891, at the age of 67 years. A notice of the life and works of this long-eminent German ornithologist is necessarily deferred till a later number of 'The Auk.'

THE NINTH CONGRESS of the American Ornithologists' Union will be held at the American Museum of Natural History, New York City, November 17-19, 1891. It is hoped that the regular increase in attendance

of both Active and Associate Members shown at previous meetings will be sustained at the present reunion. The time devoted to routine business will be reduced to the minimum, and the presentation and discussion of scientific papers be made the object of the meeting. It is requested that all members having papers to present send the titles of the same to the Secretary, Mr. John H. Sage, Portland, Conn., at least one week prior to the date on which the Congress convenes. This will permit of the proper arrangement of subjects and preparation of a programme, a plan which has proved to be of great utility and convenience.

Special features of the meeting will be an exhibition of the original drawings made by Wolf to illustrate Mr. Elliot's sumptuous ornithological works, and a stereopticon exhibition of lantern slides portraying living birds. The co-operation of members in adding to the success of this last-named exhibit is earnestly requested. Should any member having such slides be unable to attend the meeting, he will confer a favor by forwarding them, with an explanation of their character, or the manner in which the pictures were taken, to the President, Mr. D. G. Elliot, American Museum of Natural History, New York City. They will be promptly returned at the close of the session.

THE SECOND International Ornithological Congress, held at Budapest, May 17-27, 1891, was attended by about two hundred ornithologists, mostly from Germany, Austria, and Hungary. England had two representatives and America two, the latter being Dr. Arthur P. Chadbourne and Dr. Louis B. Bishop, Dr. Chadbourne being the accredited delegate of the A. O. U. to the Congress.

The work of the Congress was divided into four sections: (1) Systematic Ornithology and Avian Anatomy; (2) Avi-Geography and Migration; (3) Biology and Oölogy; (4) Economic Ornithology. The special reports and communications to the different sections will soon be published, a number of them having already appeared.

A Code of Rules for Zoölogical Nomenclature, essentially based on the A. O. U. Code of 1886, caused considerable discussion, but was finally adopted, and henceforth "a local race which differs so much in color, form, or proportions, that it cannot be surely identified without material for comparison or a knowledge of the locality where the specimen was found, will *not* be described as a species under a binomial name, but as a subspecies, *by the addition of a third name* to that of the species from which it was derived." The abbreviation '*var.*' is only to be used for 'freaks,' while '*monstr.*' (monstrosity) will be used to indicate malformation in structure.

After adjournment the Hungarian Committee arranged several extended excursions to enable those who could do so to see the most characteristic and interesting local faunæ.

LITTLE, BROWN, AND COMPANY, Boston, are about to publish a popular handbook of the ornithology of the United States and Canada, by Mr. Montague Chamberlain, based on Nuttall's well-known 'Manual.' It will

form two octavo volumes, with colored frontispieces and numerous illustrations in the text. The publishers' announcement states that it will retain everything of value in the original work, including all of Nuttall's delightful descriptions of bird-life, only the obsolete or erroneous portions being omitted. It will include also an account of all of the species and subspecies described since Nuttall wrote, bringing the general subject down to date, not only in this respect, but as regards nomenclature and descriptions, all of the latter being rewritten by Mr. Chamberlain, in simple, well-known and untechnical terms. The specimen pages before us give promise of a very attractive and useful handbook, filling a place of late unoccupied by any work of similar scope.

MR. P. L. JOUY, so well known for his ornithological work in Japan, sailed on October 1 for Mexico, to collect birds and mammals for the U. S. National Museum. His special field for the present will be in the Province of San Luis Potosi, which, so far as thorough field work is concerned, is practically new and very inviting ground. The results of Mr. Jouy's labors will hence be anticipated with interest.

DR. G. BAUR, of Clark University, Worcester, Mass., and Mr. C. J. Adams of Champaign, Ill., have just returned from a three months' exploration of the fauna and flora of the Galapagos Islands. On reaching Chatham Island—the only one of the group that can be said to be inhabited—a sloop was chartered and each of the islands visited. Special attention was given to the bird life, resulting in a collection of some 600 bird skins and numerous specimens in spirits. Among the species secured is a good series of the rare *Creagrus furcatus*, and several others not hitherto known from the Galapagos. The collection cannot fail to throw much light upon the ornithology of this peculiarly interesting group of islands.

THE TREASURER of the A. O. U. received December 5, 1890, an envelope postmarked "Paris, November 23, 1890." It contained a National Bank bill of the value of \$5.00, but did not give the name of the sender. The envelope bore the imprint of "Hotel Continental, 3 Rue Castiglione." Will the sender please send his name to the Treasurer.

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ERRATA.

- Page 120, line 14, for November 20 read November 2.
" 162, " 28, " erythrorothrax " erythrothorax.
" 162, " 34, " Pipilo " Pipile.
" 222, " 8, after maculatus " megalonyx.
" 320, " 25, for Zema " Xema.
" 354, " 26, " dominicensis " dominicus.

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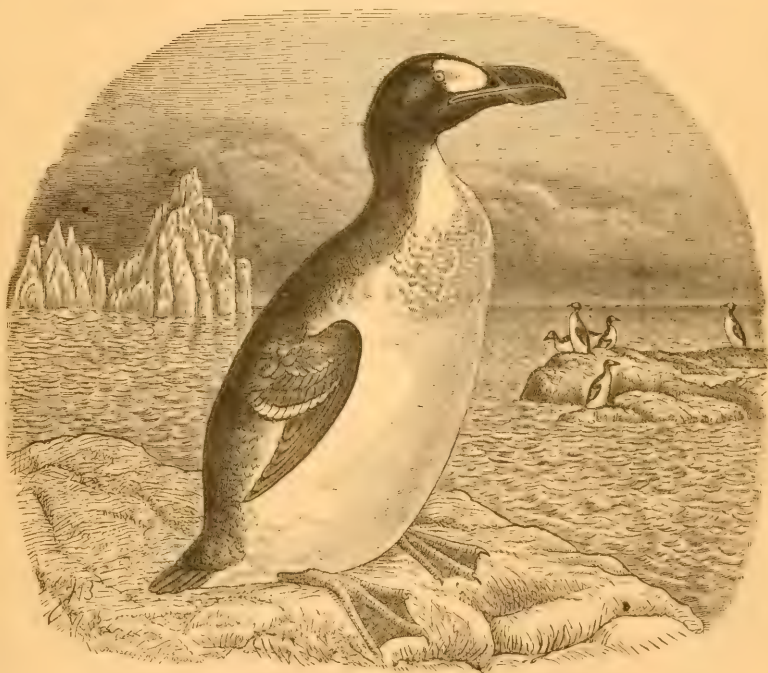
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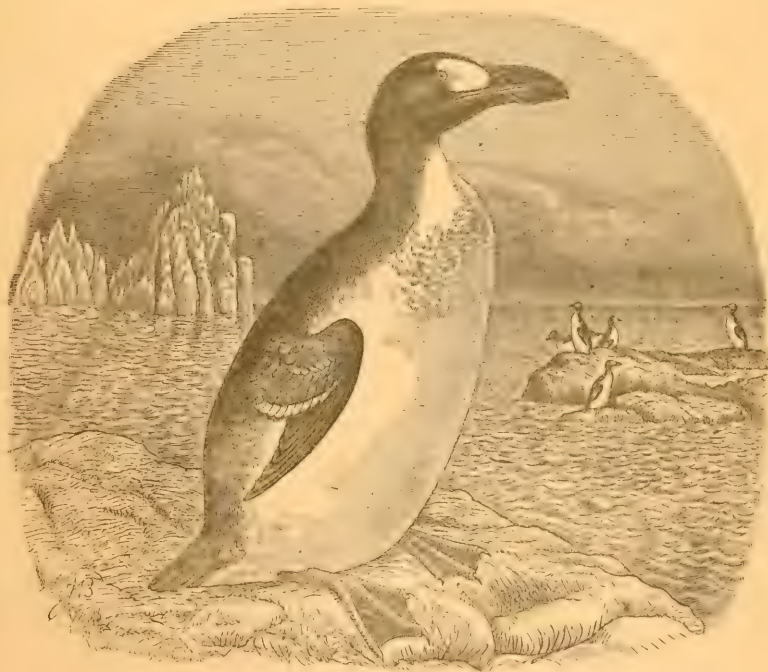
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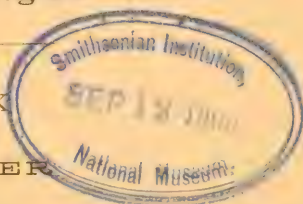


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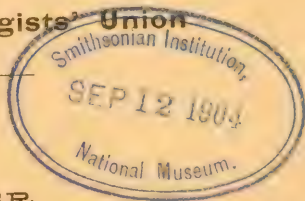


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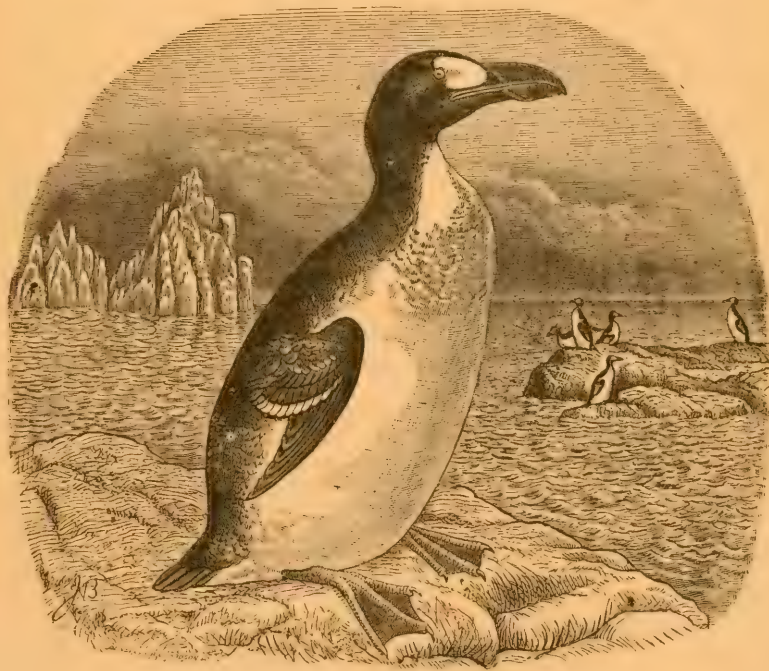
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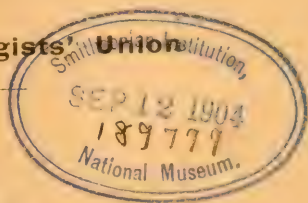


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